

TC-FX320/FX4060

SONY[®] SERVICE MANUAL

CORRECTION-1

File this correction with the next service manuals.

TC-FX320 (9-951-764-11)

TC-FX320/FX4060 (9-952-395-11)

US Model
Canadian Model
AEP Model
UK Model
E Model
G-AEP Model

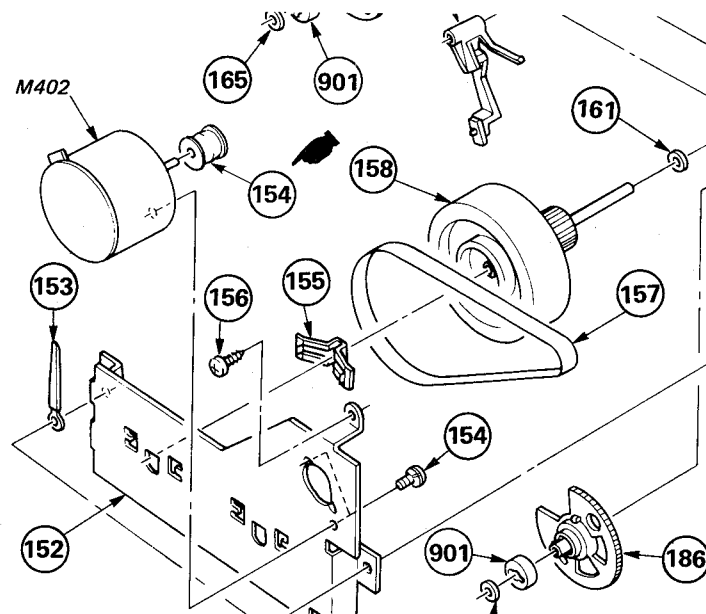
TC-FX320

G-AEP Model

TC-FX4060

Page26

 : corrected portion



INCORRECT

154	_____
906	_____
M402	_____

CORRECT

154	3-306-262-00	Pulley (R), Motor
906	*1-613-523-11	PC Board, Direction SW
M402	1-541-239-00	Motor

Page29

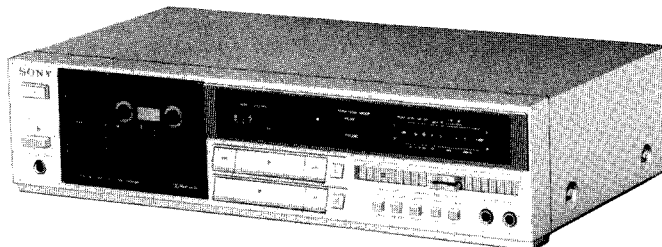
S402	_____
S403	_____

S402	1-553-856-00	Switch, key board
S403	1-553-856-00	Switch, key board

TC-FX320

SERVICE MANUAL

*US Model
Canadian Model
AEP Model
UK Model
E Model*



'Dolby' and the double-D symbol are the trade marks of Dolby Laboratories Licensing Corporation. Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

SILVER MODEL SHOWN.

SPECIFICATIONS

Tape Transport Mechanism Type	TCM-150V4
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Recording system

4-track 2-channel stereo

Fast-forward and rewind time

Approx. 100 sec. (with C-60 cassette)


Bias frequency

105 kHz


Signal-to-noise ratio (NAB, at peak level)

Cassette	Dolby NR switch	OFF	B-TYPE ON	C-TYPE ON
TYPE IV (Sony METAL-ES)		55 dB	65 dB	71 dB
TYPE II (Sony UCX)		55 dB	63 dB	69 dB
TYPE I (Sony HF-S)		52 dB	61 dB	67 dB

SAFETY-RELATED COMPONENT WARNING!!

COMPONENTS IDENTIFIED BY SHADING AND MARK  ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.

ATTENTION AU COMPOSANT AYANT RAPPORT À LA SÉCURITÉ!

LES COMPOSANTS IDENTIFIÉS PAR UNE TRAME ET UNE MARQUE  SUR LES DIAGRAMMES SCHEMATIQUES ET LA LISTE DES PIÈCES SONT CRITIQUES POUR LA SÉCURITÉ DE FONCTIONNEMENT. NE REMPLACER CES COMPOSANTS QUE PAR DES PIÈCES SONY DONT LES NUMÉROS SONT DONNÉS DANS CE MANUEL OU DANS LES SUPPLÉMENTS PUBLIÉS PAR SONY.

Total harmonic distortion

1.0% (with Sony METAL-ES cassette)

Frequency response

DOLBY NR OFF

- With TYPE IV cassette (Sony METAL-ES)
20 - 17,000 Hz
30 - 16,000 Hz (± 3 dB)
30 - 13,000 Hz (± 3 dB, 0 VU recording)
30 - 16,000 Hz (DIN)
- With TYPE II cassette (Sony UCX)
20 - 17,000 Hz
30 - 14,000 Hz (± 3 dB)
30 - 14,000 Hz (DIN)
- With TYPE I cassette (Sony HF-S)
20 - 16,000 Hz
30 - 13,000 Hz (DIN)

Wow and flutter

0.05% WRMS (NAB)
 $\pm 0.14\%$ (DIN)

Inputs

Microphone inputs (phone jacks)
Sensitivity 0.25 mV (-70 dB)
For a low impedance microphone
Line inputs (phono jacks)
Sensitivity 77.5 mV (-20 dB)
Input impedance 47 kilohms

Outputs

Line outputs (phono jacks)
Output level 0.44 V (-5 dB) at load impedance 4.7 kilohms
Load impedance over 10 kilohms
Headphone output (stereo phone jack)
Output level -28 dB at a load impedance of 8 ohms

— Continued on next page —



MC-Service

STEREO CASSETTE DECK
SONY®



TC-FX320

General

Power requirements

AEP model: 220 V ac, 50/60 Hz
(240 V ac adjustable by authorized Sony personnel)
UK model: 240 V ac, 50 Hz
(220 V ac adjustable by authorized Sony personnel)
US, Canadian model: 120 V, 60 Hz
E model: 120, 220 or 240 V ac adjustable, 50/60 Hz

Power consumption

12 watts

Dimensions

Approx. 430 × 105 × 245 mm (w/h/d)
(17 × 4¹/₄ × 9³/₄ inches)

including projecting parts and controls

Weight

Approx. 3.6 kg (7 lbs 15 oz)

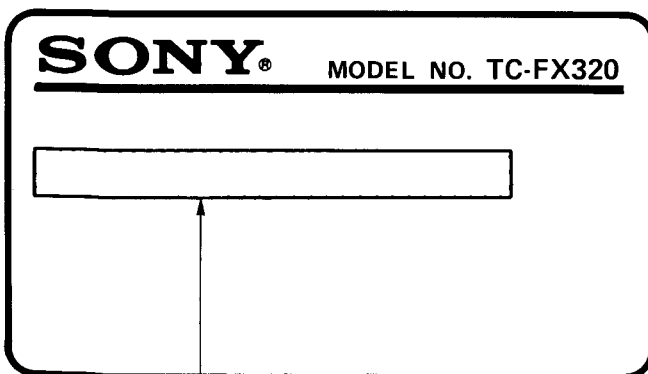
While the information given is correct at the time of printing, small production changes in the course of our company's policy of improvement through research and design might not necessarily be indicated in the specifications. We would ask you to check with your appointed Sony dealer if clarification on any point is required.

Note

This appliance conforms with EEC Directives 76/889 and 82/499 regarding interference suppression.

MODEL IDENTIFICATION

— Specification Labels —



US, Canadian Model:	AC 120V 60Hz 12W
AEP, G-AEP Model:	AC 220V ~ 50/60Hz 12W
UK Model:	AC 240V ~ 50/60Hz 12W
E Model:	AC 120, 220, 240V ~ 50/60Hz 12W

SAFETY CHECK-OUT (US Model)

After correcting the original service problem, perform the following safety check before releasing the set to the customer:

Check the antenna terminals, metal trim, "metallized" knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described below.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester, such as the Simpson 229 or RCA WT-540A. Follow the manufacturers' instructions to use these instruments.
2. A battery-operated AC milliammeter. The Data Precision 245 digital multimeter is suitable for this job.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The "limit" indication is 0.75 V, so analog meters must have an accurate low-voltage scale. The Simpson 250 and Sanwa SH-63Trd are examples of a passive VOM that is suitable. Nearly all battery operated digital multimeters that have a 2 V AC range are suitable. (See Fig. A)

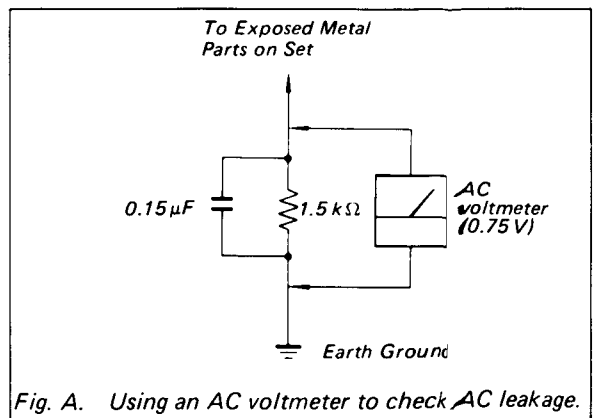
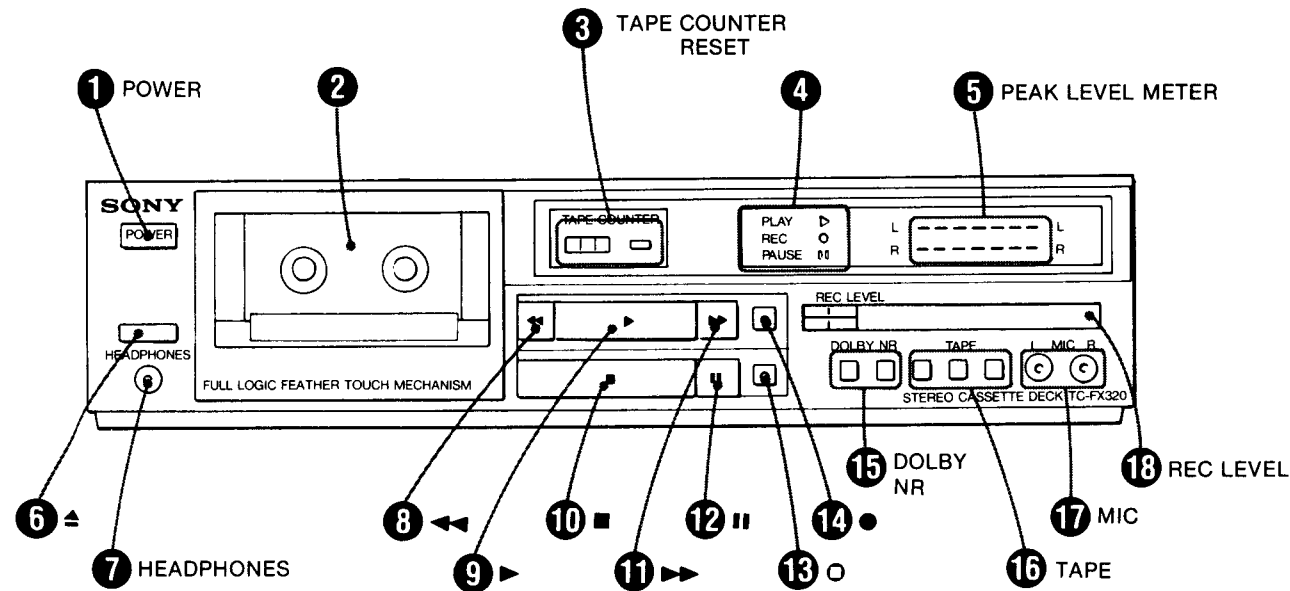


Fig. A. Using an AC voltmeter to check AC leakage.

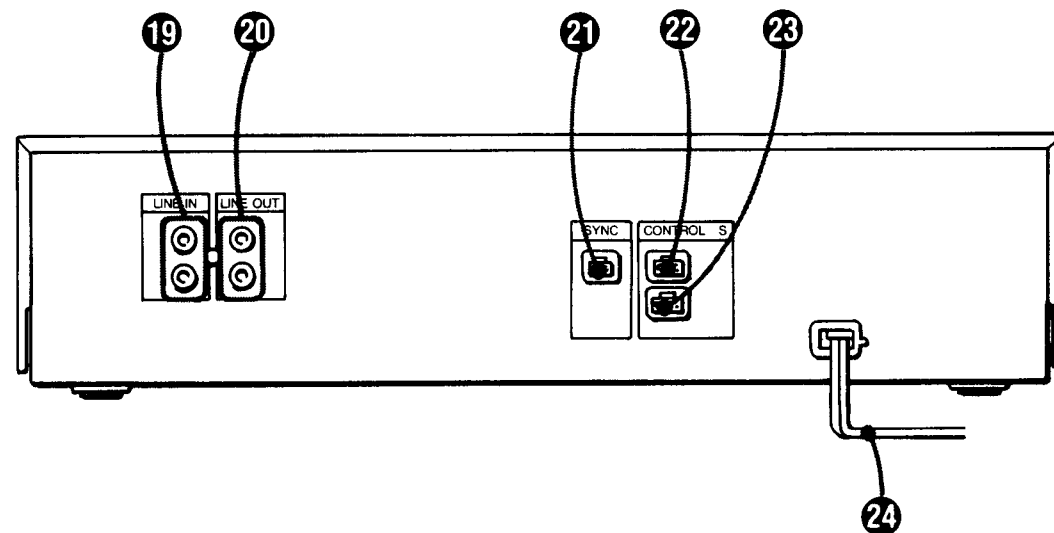
SECTION 1 OUTLINE

1-1. FUNCTION OF CONTROLS

A



B



Each number in the text is keyed to that of the illustrations on pages 3.

Front panel (Fig. A)

1 POWER switch

2 Cassette holder

3 TAPE COUNTER and RESET button

The tape counter provides a numerical reference point while recording which can be used to index a recorded cassette. To reset to zero, press the RESET button.

4 Function indicators

5 PEAK LEVEL METERS

These meters show the peak input level of each channel during recording, and recorded levels in the playback mode.

6 (eject) button

Press this button to open the cassette holder.

7 HEADPHONES jack (stereo phone jack)

8 (rewind) key

Press this key to advance the tape rapidly to the left. It is also used for the auto play and review functions.

9 (playback) key

Press this key to playback the cassette. To record, press this key while holding the (record) key down. The tape is transported to the right.

10 (stop) key

11 (fast-forward) key

Press this key to advance the tape rapidly to the right. It is also used for the cue function.

12 (pause) key

Press this key to stop the tape running for a moment during recording or playback. This key is also used for the cue and review functions.

13 (record muting) key

Press this key to eliminate unwanted material and to insert a blank space during recording.

14 (record) key

Press this key together with the (playback) key to start recording.

15 DOLBY NR* switch

For recording or playback with Dolby B-type system, set the DOLBY NR switch to B. For recording or playback with Dolby C-type NR system, set it to C. For recording without Dolby NR system, set it to OFF.

* "Dolby" and the double-D symbol are trade marks of the Dolby Laboratories Licensing Corporation. Noise reduction system manufactured under license from Dolby Laboratories Licensing Corporation.

The Dolby NR system reduces tape hiss and improves the signal-to-noise ratio at low-level high-frequency signals.

16 TAPE select buttons

Depress one of the TAPE select buttons, depending on which type of tape you use. The optimum bias current adjustment for recording and the optimum equalization adjustment for both recording and playback are set.

17 MIC jacks (phone jack)

Any low-impedance microphone equipped with a phone plug may be used.

18 REC LEVEL (recording level) controls

These controls adjust the recording level.

Rear panel (Fig. B)

19 LINE IN (line input) jacks (phono jack)

Accept tape outputs from an amplifier for tape recording and line outputs from another tape deck when dubbing a tape from that unit.

20 LINE OUT (line output) jacks (phono jack)

Accept tape inputs from an amplifier for playing back a tape and line inputs from another tape deck for dubbing a tape onto that unit.

21 SYNC connector (3-pin)

For synchro recording, connect to the SYNC connector of the turntable system. For further details, refer to the instruction manual of the Sony turntable system.

22 CONTROL S IN connector

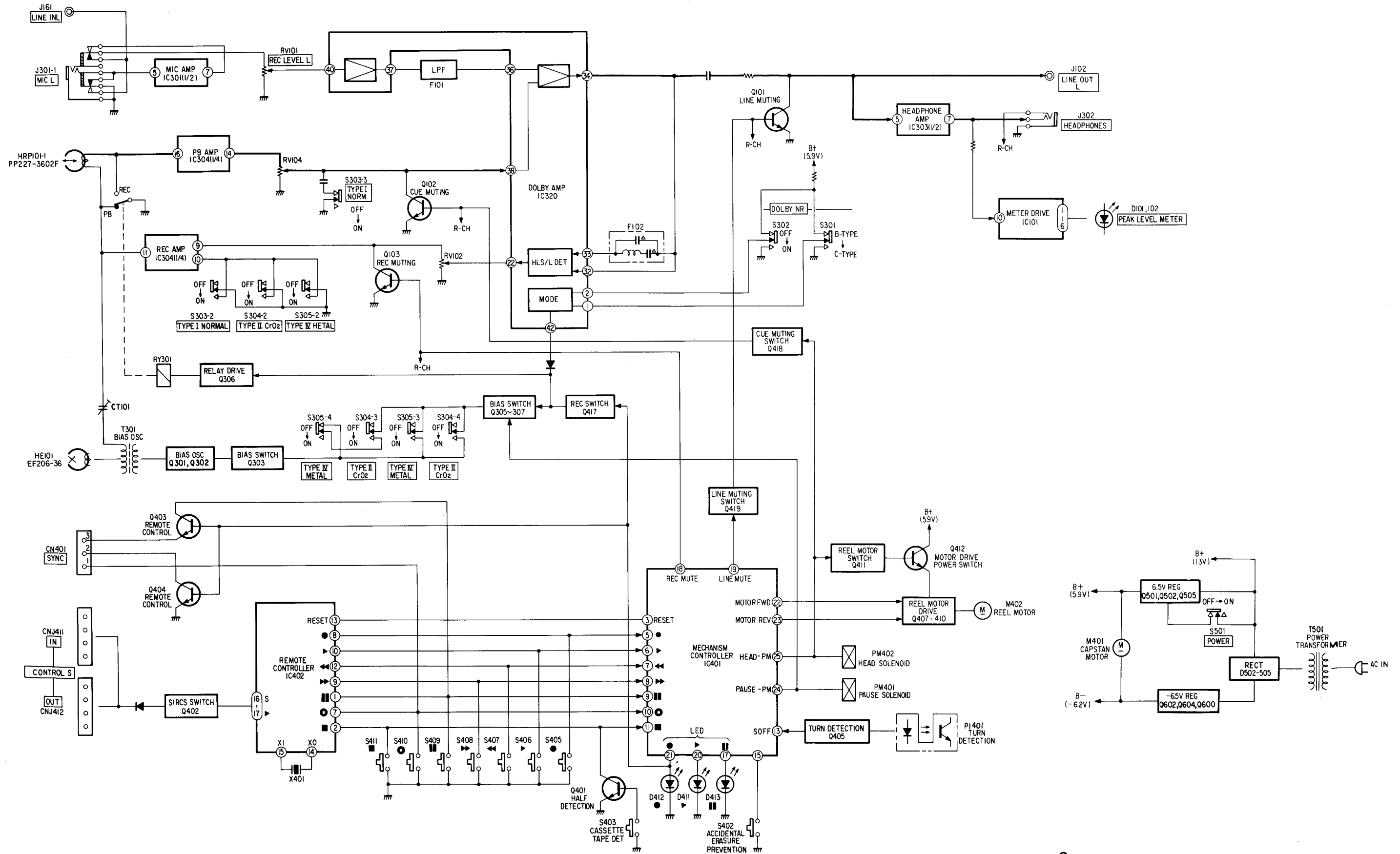
Connect to the CONTROL S OUT connector of Sony audio equipments equipped with a 4-pin remote control connector.

23 CONTROL S OUT connector

Connect to the CONTROL S IN connector of Sony audio equipments equipped with a 4-pin remote control connector.

24 AC power cord

1-2. BLOCK DIAGRAM



SECTION 2 DISASSEMBLY

Note: Follow the disassembly procedure in the numerical order given.

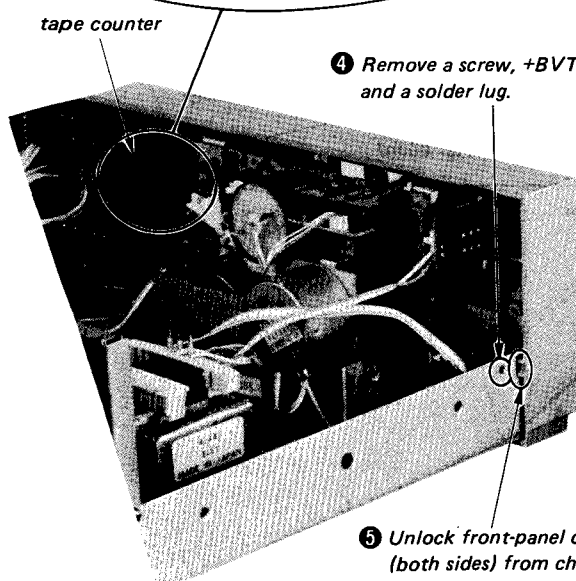
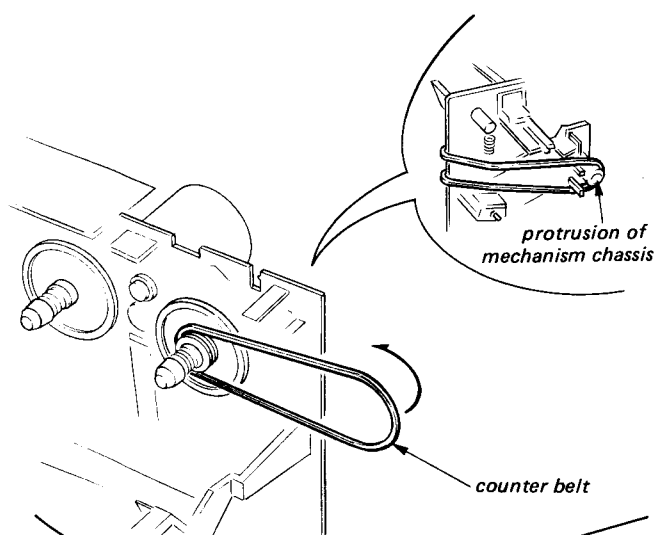
CASE

Remove four (4) screws and case.



FRONT PANEL

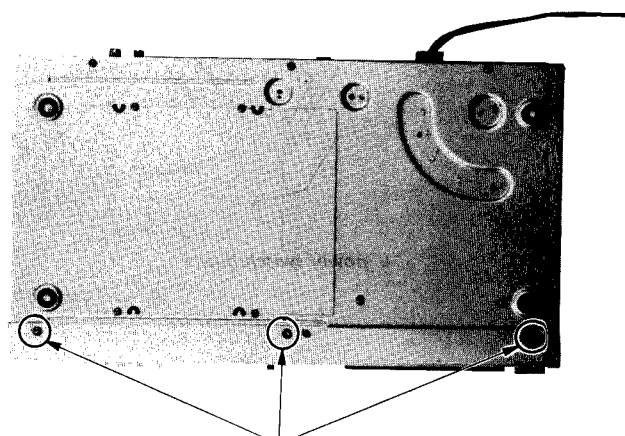
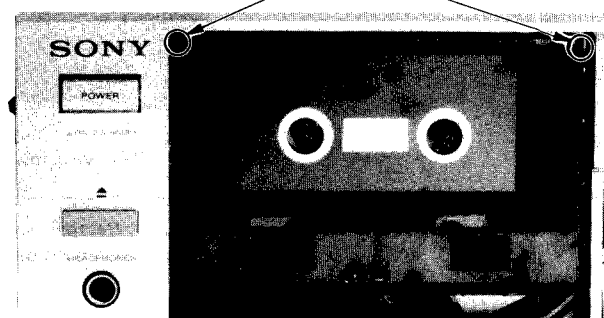
- ① Remove counter belt and temporarily hang it on the protrusion of the mechanism chassis.



- ④ Remove a screw, +BVTT3 x 6, and a solder lug.

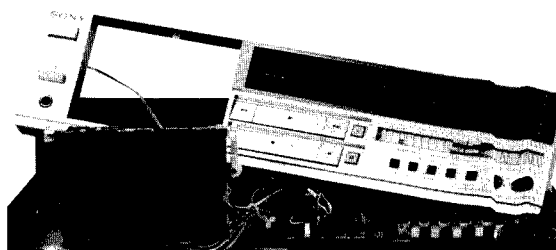
- ⑤ Unlock front-panel claws (both sides) from chassis.

- ② Remove screws, +BVTT3 x 6 (two).

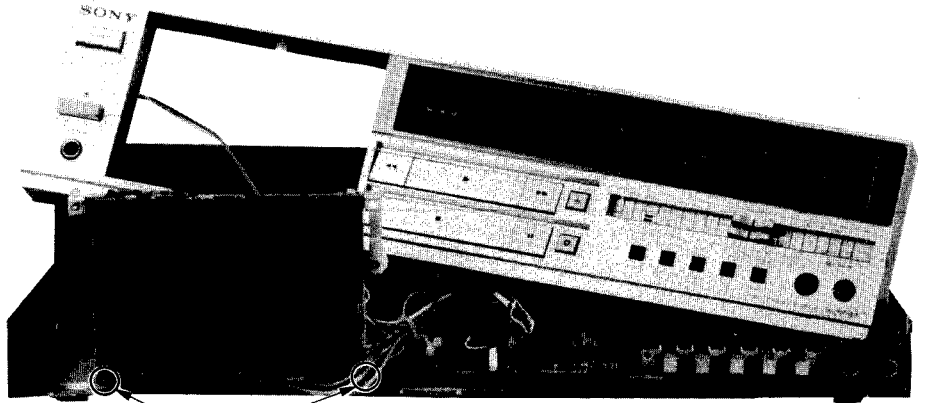


- ③ Remove screws, +BVTT3 x 6 (three).

- ⑥ Pull front panel forward. Take care not to break lead wires extracting from PC boards. Front panel contains six (6) PC boards.



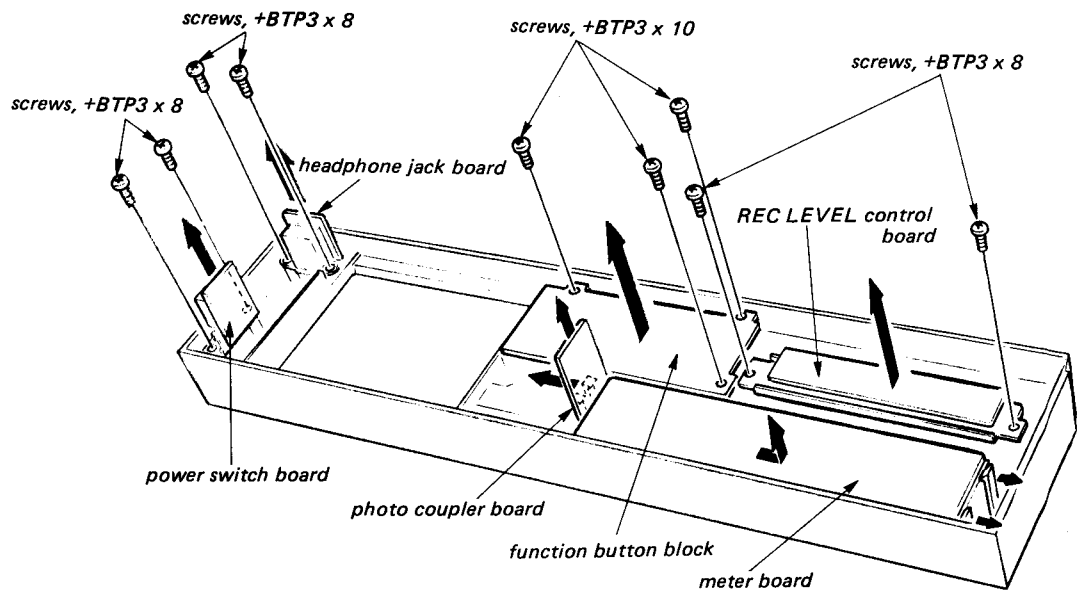
DECK MECHANISM



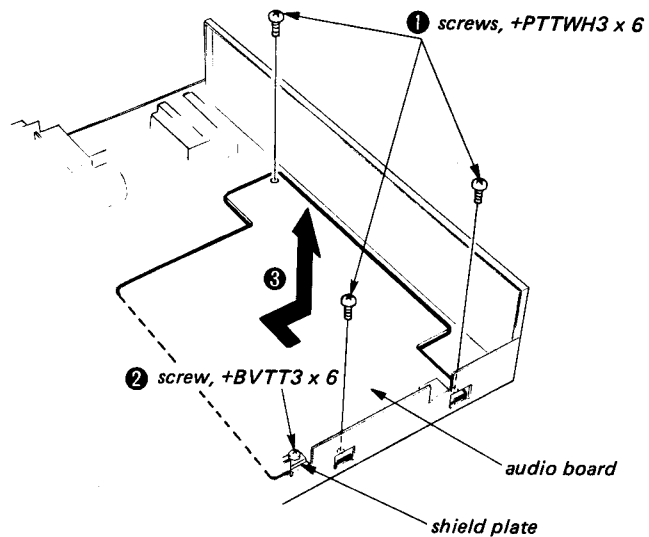
Remove screws, +BVTT3 x 6 (two).

PC BOARDS FROM FRONT PANEL

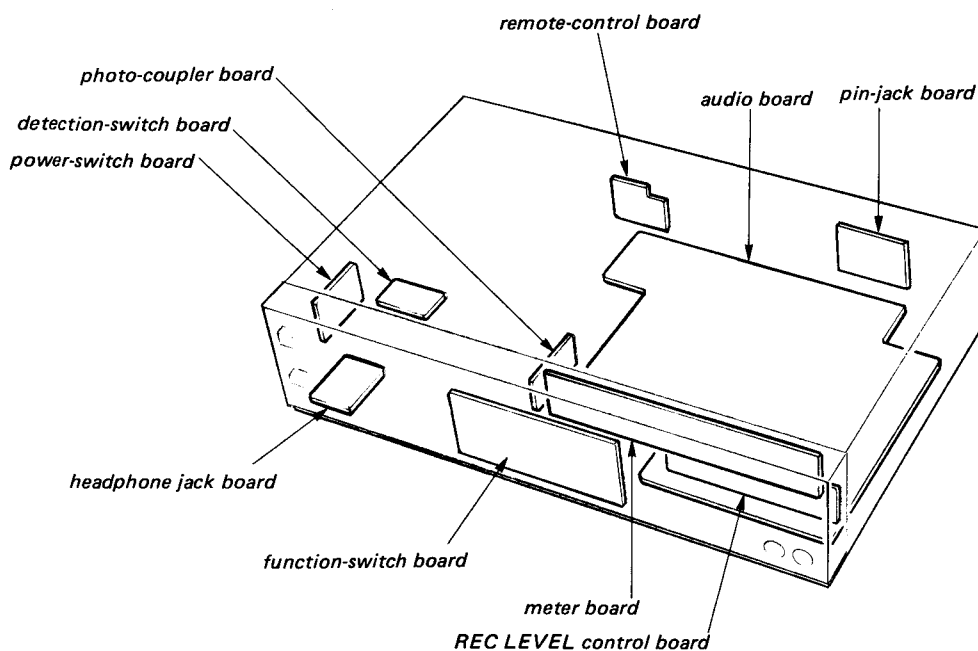
Remove appropriate screws or unlock appropriate claws from PC boards as shown.



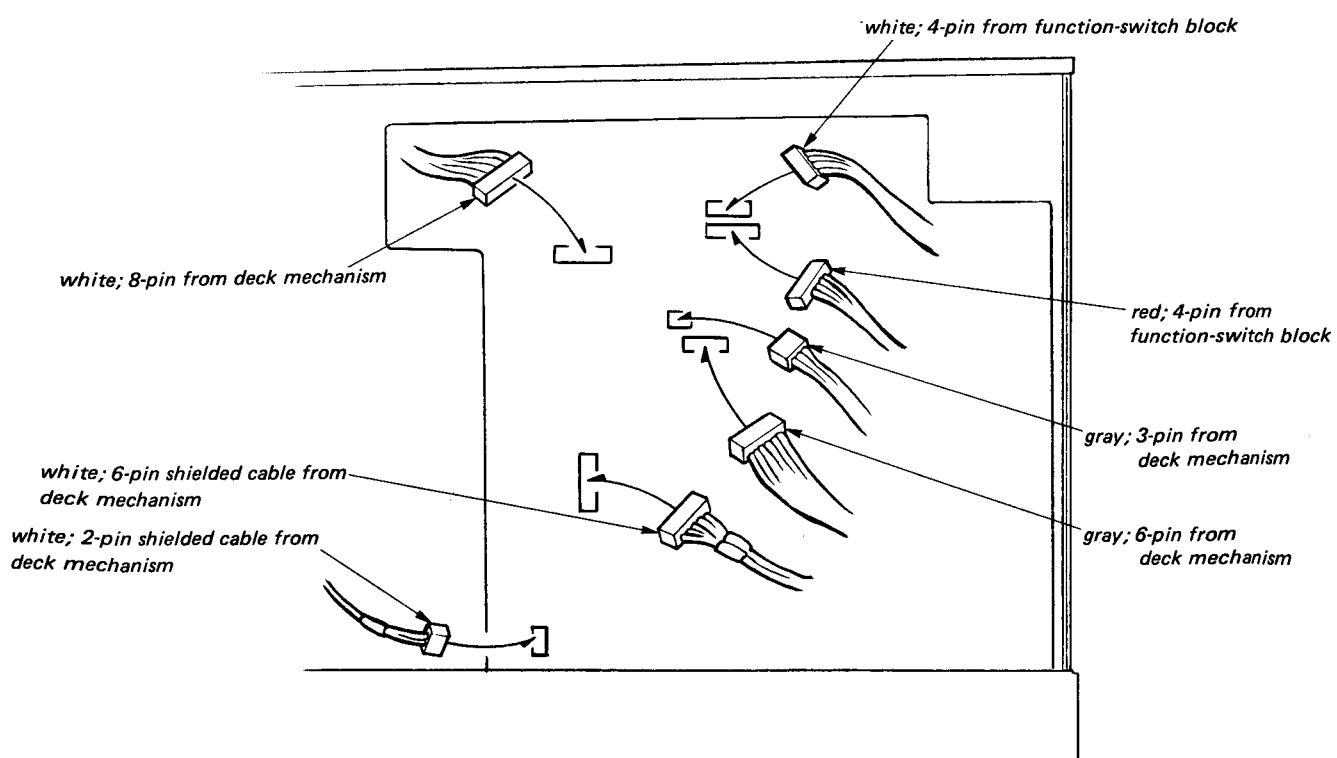
AUDIO BOARD



LOCATION OF PRINTED-CIRCUIT BOARDS



RECONNECTING CONNECTORS



SECTION 3 ADJUSTMENTS

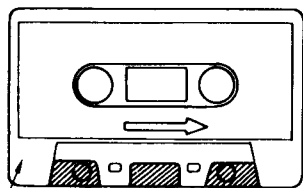
3-1. MECHANICAL ADJUSTMENTS

PRECAUTION

1. Clean the following parts with a denatured-alcohol-moistened swab:
 record/playback head pinch roller
 erase head rubber belts
 capstan
2. Demagnetize the record/playback head with a head demagnetizer.
3. Do not use a magnetized screwdriver for the adjustments.
4. After the adjustments, apply suitable locking compound to the parts adjusted.
5. The adjustments should be performed with the rated power supply voltage unless otherwise noted.

Head Height Adjustment

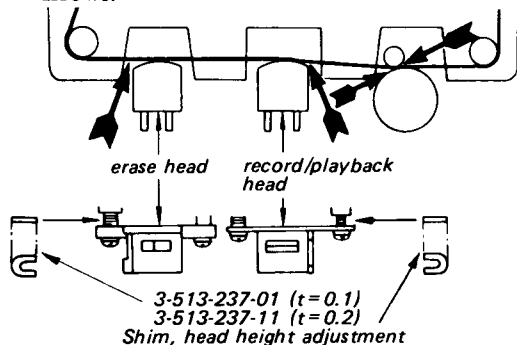
1. Prepare an adjustment cassette as shown below, or mirror cassette.



C-120
tape cassette

Cut out hatched
portions.

2. In playback mode and viewing from the front, adjust the head heights to eliminate tape curl and tape twist at the portions shown by the arrows.



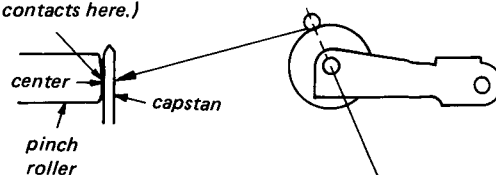
Torque Measurement

Torque	Torque meter	Meter reading
Forward	CQ-102C	28 – 60 g-cm (0.41 – 0.8 oz-inch)
Back Tension	CQ-102C	2.5 – 6 g-cm (0.03 – 0.08 oz-inch)
Fast Forward and Rewind	CQ-201B	80 – 150 g-cm (1.1 – 2.0 oz-inch)

Pinch Roller Pressure Measurement

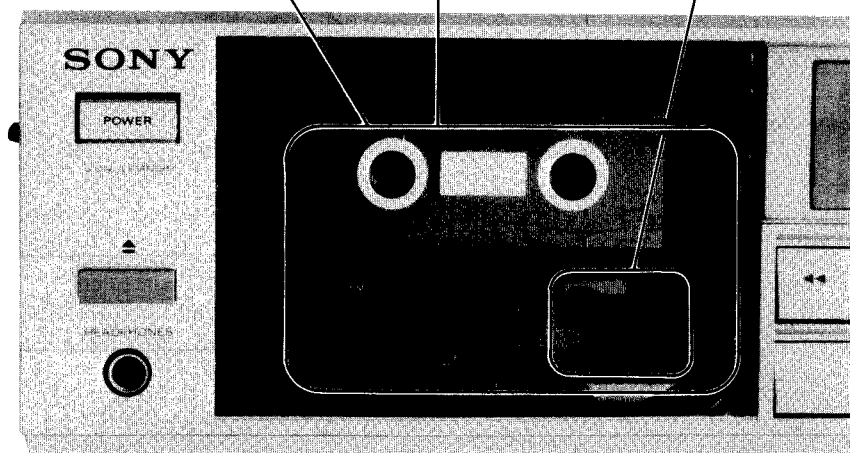
— Playback Mode —

2. Slowly return the pinch roller and read the spring scale just when the pinch roller starts rotating. (The capstan should first contacts here.)



1 tension gauge

200–300 g-cm
(2.77–4.16 oz-inch)



3-2. ELECTRICAL ADJUSTMENTS

Note: The adjustment should be performed in the order given in this service manual. The adjustments should be performed for both L-CH and R-CH.

- TAPE switches are automatically set according to the tape.

Tape	TAPE Indicator
CS-17	TYPE I : NORMAL
CS-26	TYPE II : CrO ₂
CS-40(CS-412)	TYPE IV : METAL

- Switches and controls should be set as follows unless otherwise specified.

DOLBY NR switch: OFF

- Standard Record:

Deliver the standard input signal level to the input jack and set the REC LEVEL control to obtain the standard output signal level.

Standard Input Level

	LINE IN
source impedance	10k Ω
input level	0.25V (-10dB)

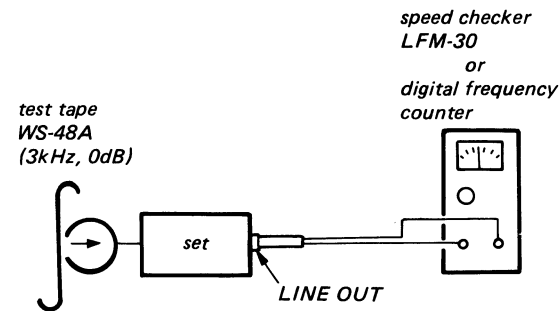
Standard Output Level

	LINE OUT
load impedance	47k Ω
output level	0.435V (-5dB)

Speed Adjustment

Procedure:

Mode: playback



Specification:

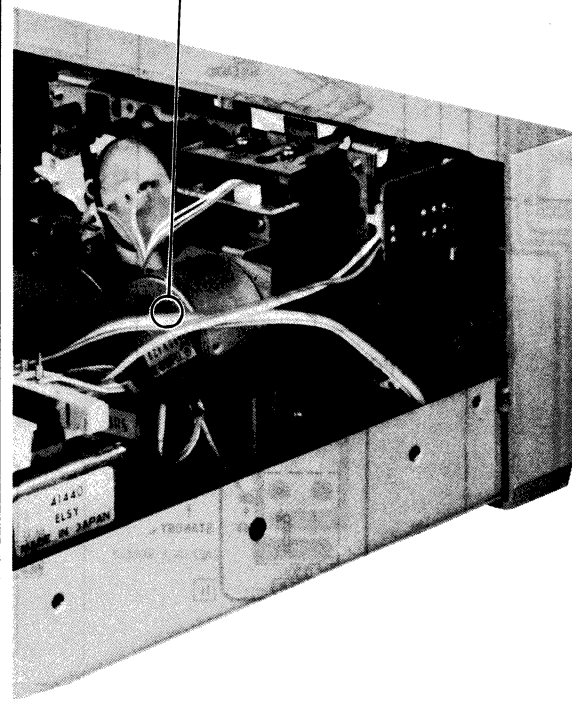
Speed checker	Digital frequency counter
-1 - +1%	2,970 - 3,030Hz

Frequency difference between the beginning and the end of the tape should be within 0.8% (25Hz).

Adjustment Location:

— capstan motor —

adjustment control inside motor

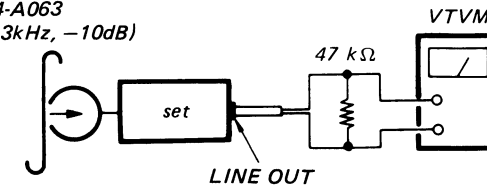


Record/playback Head Azimuth Adjustment

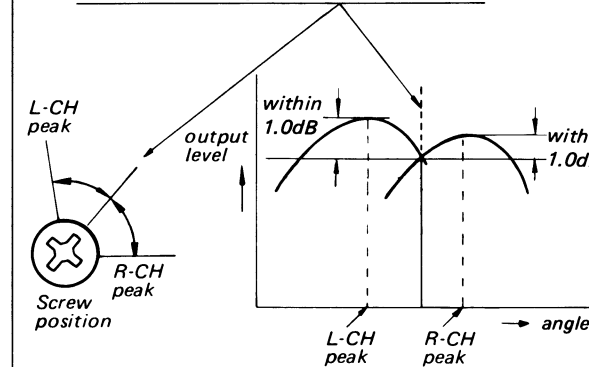
Procedure:

- Mode: playback

test tape
P-4-A063
(6.3kHz, -10dB)

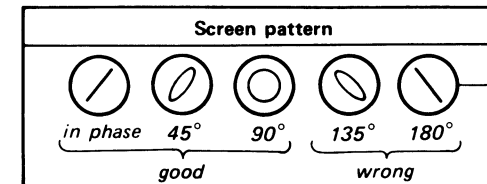
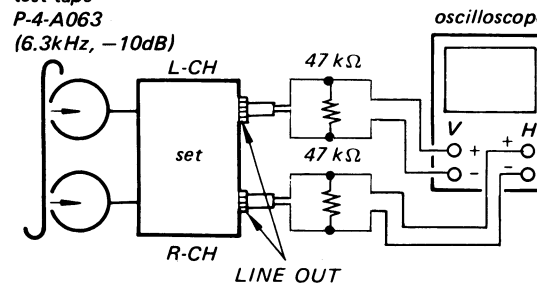


- Turn the adjustment screw for the maximum output levels. If these levels do not match, turn the adjustment screw until both of output levels match together within 1.0dB.

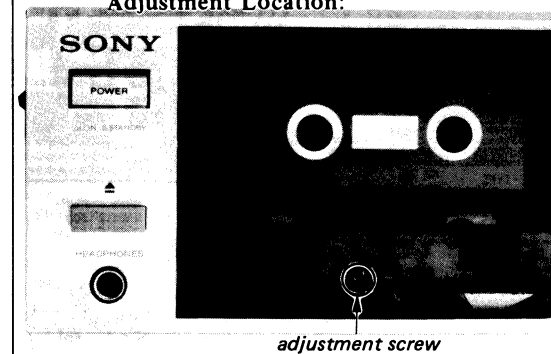


- Phase Check
Mode: playback

test tape
P-4-A063
(6.3kHz, -10dB)



Adjustment Location:

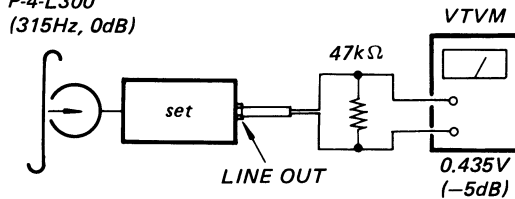


Playback Level Adjustment

Procedure:

Mode: playback

test tape
P-4-L300
(315Hz, 0dB)



Adjust RV104 (L-CH) and RV204 (R-CH).

Specification:

LINE OUT level: 0.46 - 0.42V
(-4.5 - -5.5dB)

Level difference between channels:
less than 0.5dB (0.05V)

Check that the LINE OUT level does not change in playback mode while chaging the mode from playback to stop several times.

Adjustment Location:

— audio board —



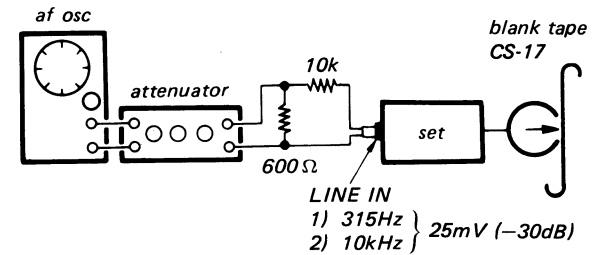
Record Bias Adjustment

Setting:

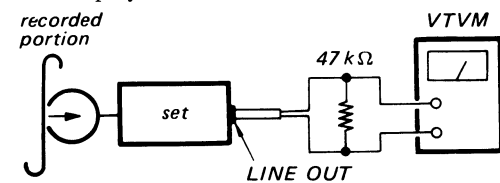
REC LEVEL control: standard record
(See page 11)

Procedure:

1. Mode: record



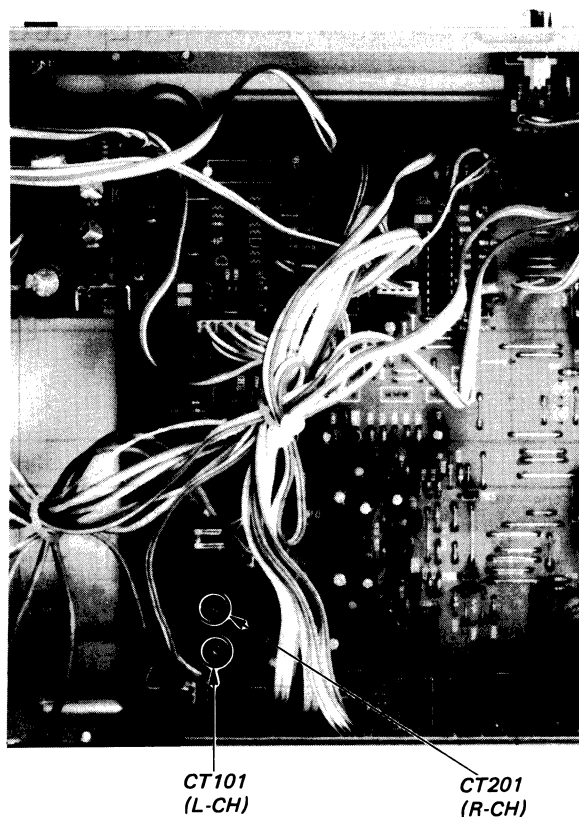
2. Mode: playback



Adjust CT101 (L-CH) and CT201 (R-CH) so that the LINE OUT level of 10kHz signal is 0dB \pm 0.5dB relative to that of 315Hz.

Adjustment Location:

— audio board —



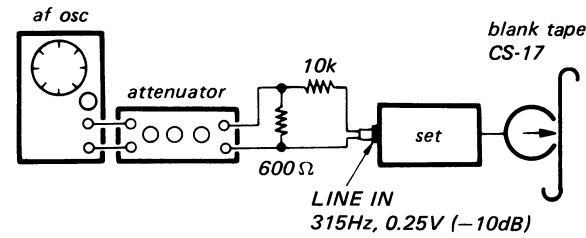
Record Level Adjustment

Setting:

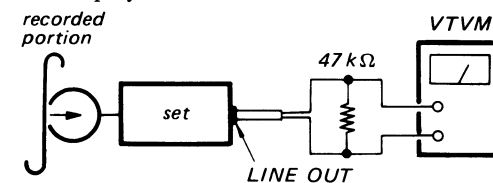
REC LEVEL control: standard record
(See page 11)

Procedure:

1. Mode: record



2. Mode: playback



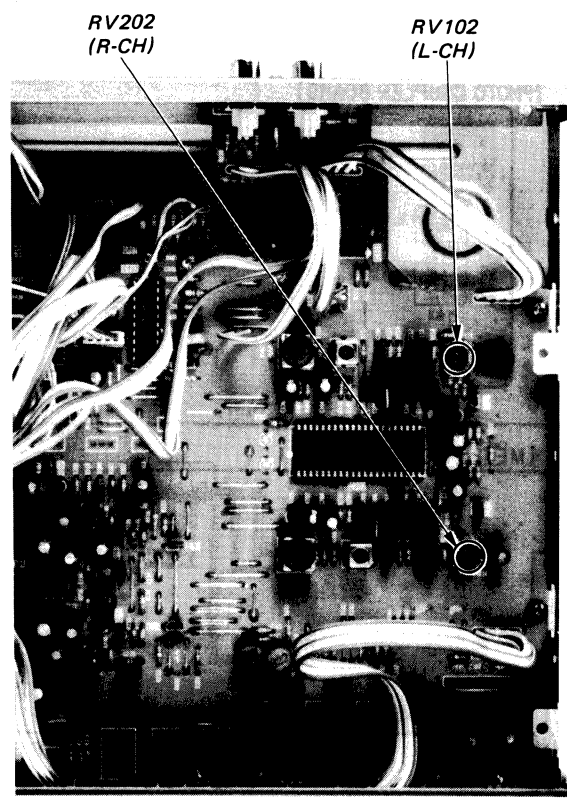
Adjust RV102 (L-CH) and RV202 (R-CH).

Specification:

LINE OUT level: 0.46 – 0.42V
(-4.5 – -5.5dB)

Adjustment Location:

— audio board —

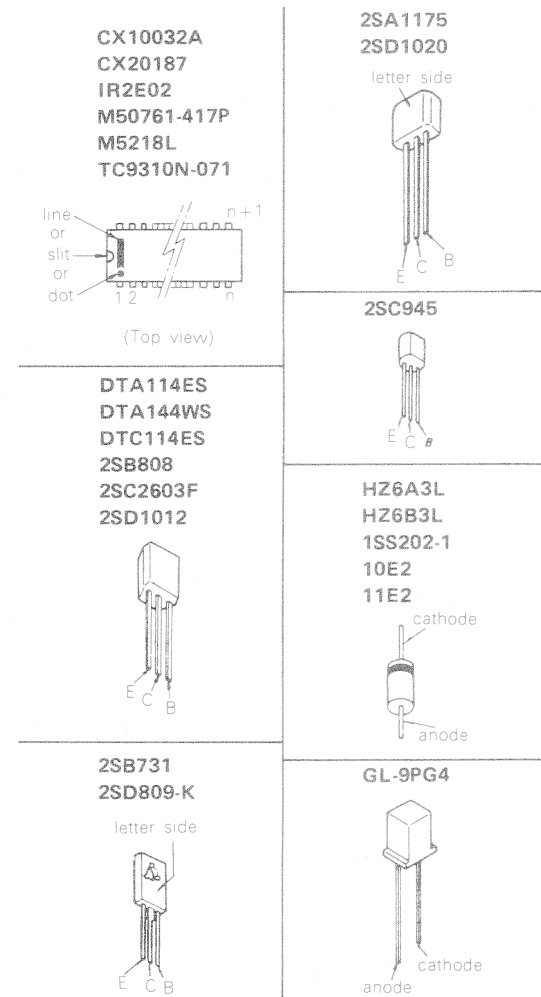


SECTION 4
DIAGRAMS

4-1. MOUNTING DIAGRAM

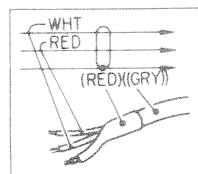
— Conductor Side —

Semiconductor Lead Layouts



Note:

- Color code of sleeving over the end of the jacket.



- — : parts extracted from the component side.
- — : parts extracted from the conductor side.
- : part mounted on the conductor side.
- : indicates side identified with part number.
- : signal path
- : L-CH signal path
- : R-CH signal path
- : B + pattern

A

B

C

D

E

F

G

H

I

J

1

2

3

4

5

6

7

8

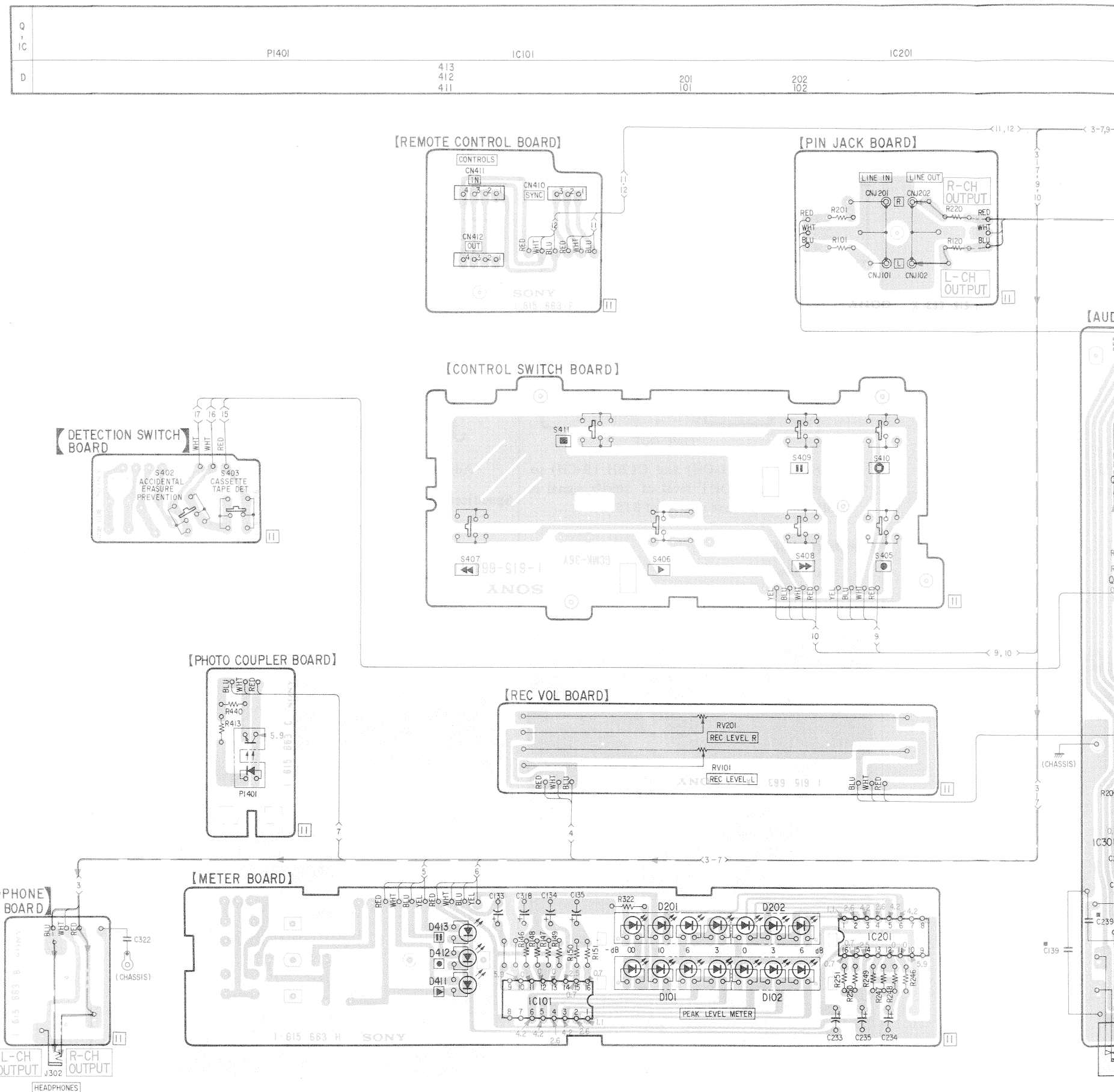
9

10

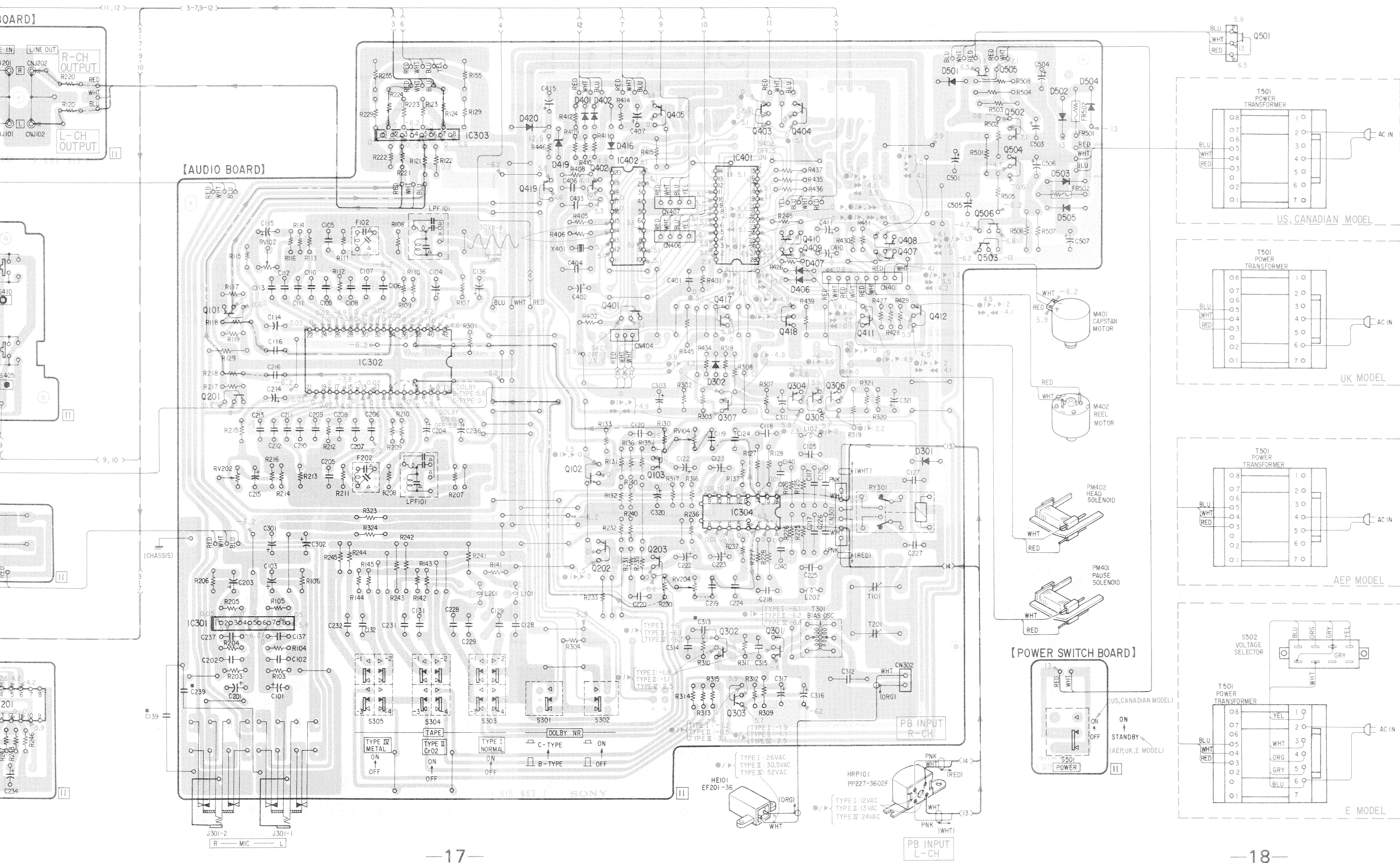
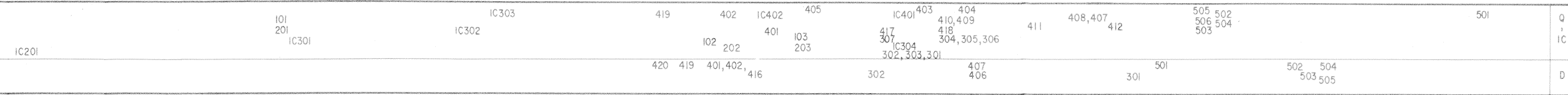
11

12

13

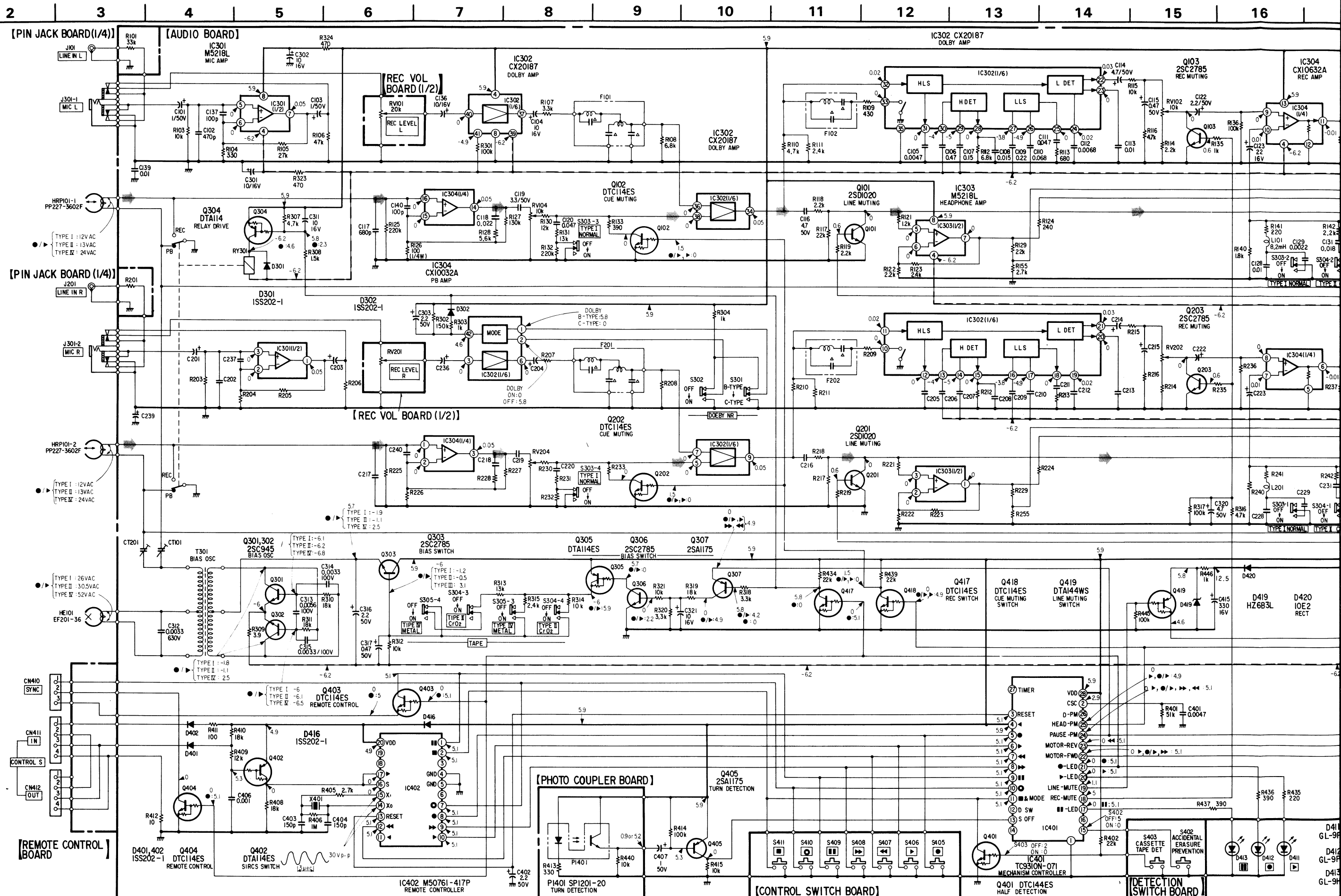


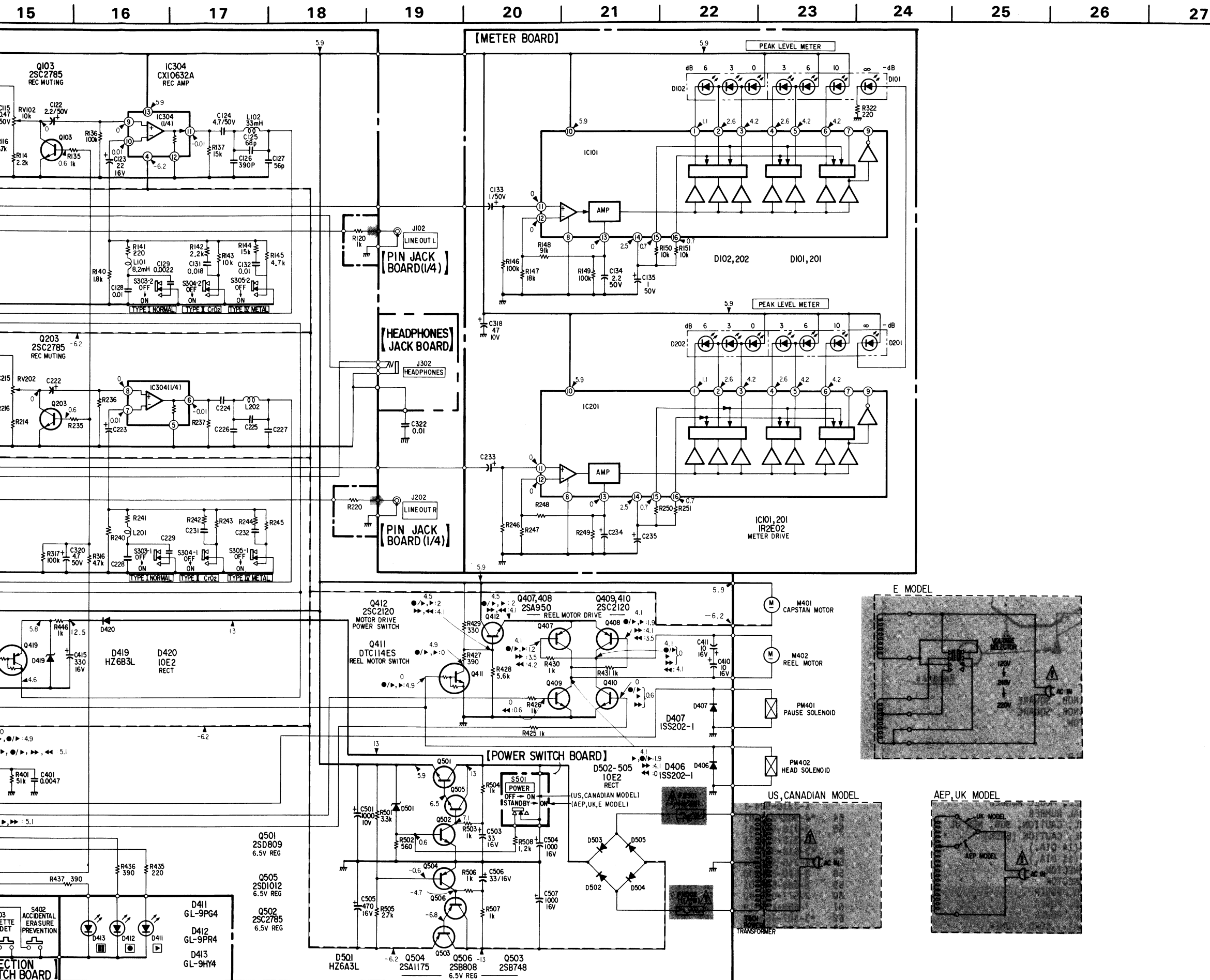
11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
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4-2. SCHEMATIC DIAGRAM

TC-FX320 TC-FX320





SECTION 5 EXPLODED VIEWS AND PARTS LIST

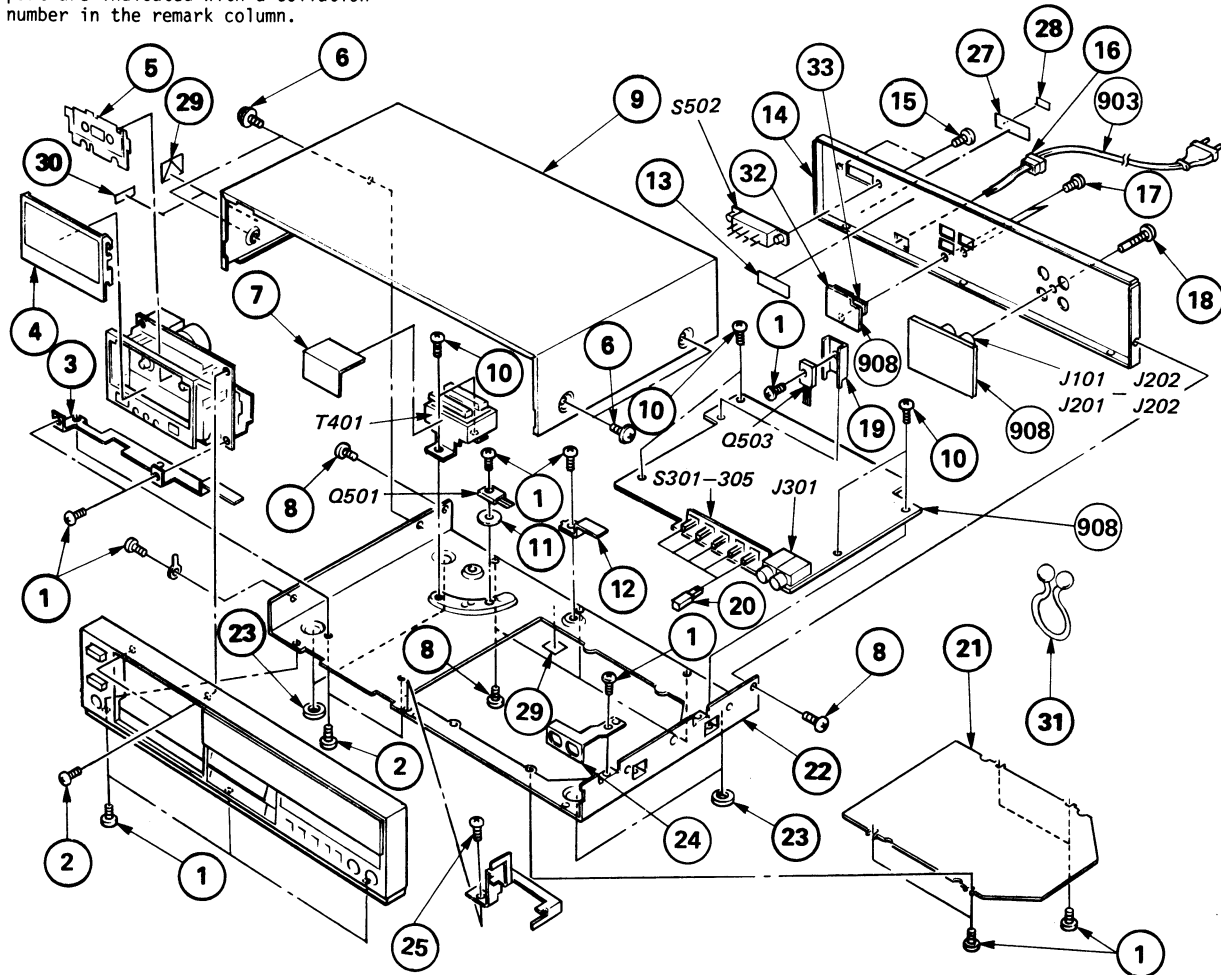
NOTE:

- The mechanical parts with no reference number in the exploded views are not supplied.
- Items marked " * " are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The construction parts of an assembled part are indicated with a collation number in the remark column.

The components identified by shading and mark A are critical for safety. Replace only with part number specified.

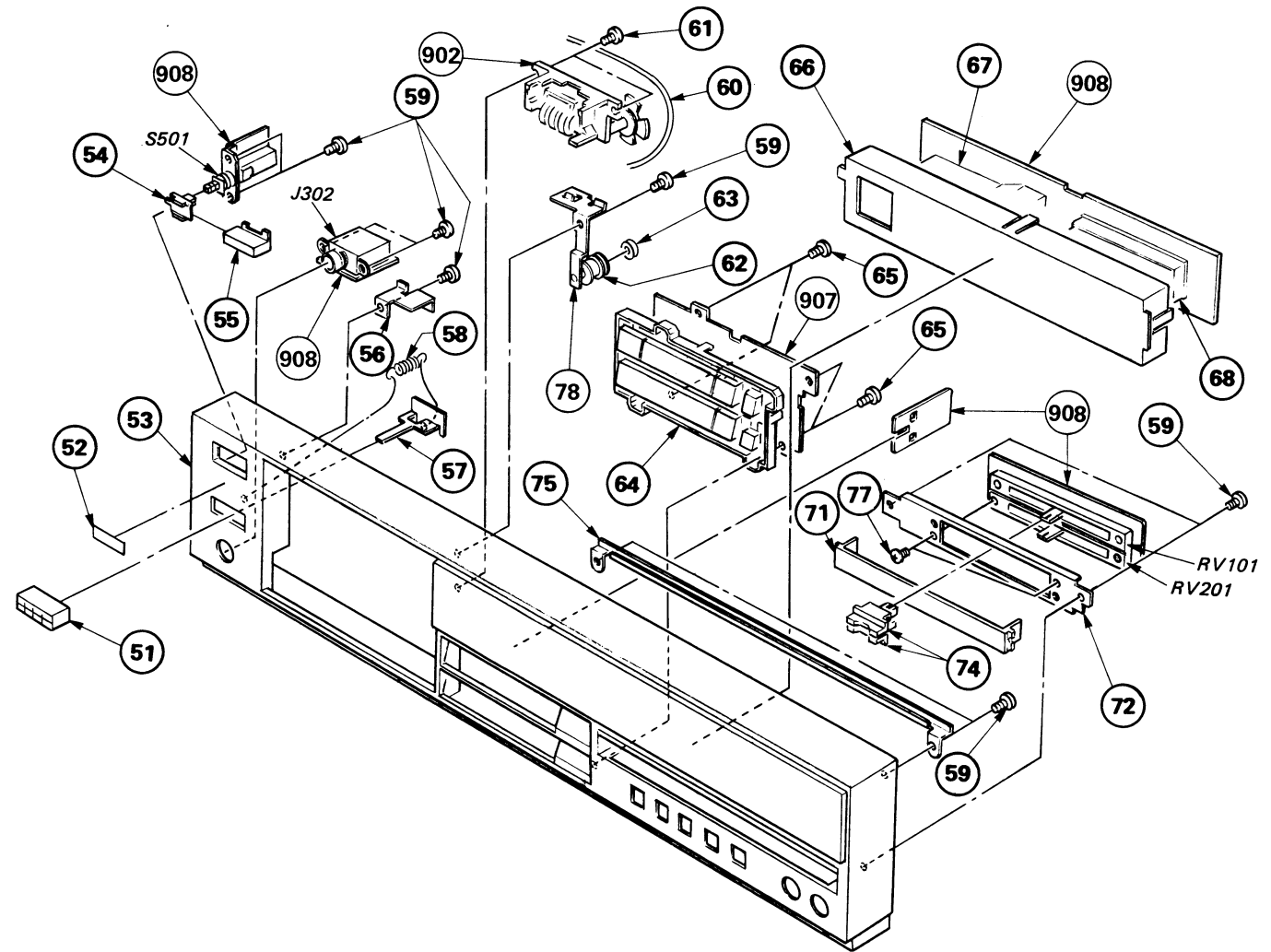
Les composants identifiés par une trame et une marque A sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

(1)

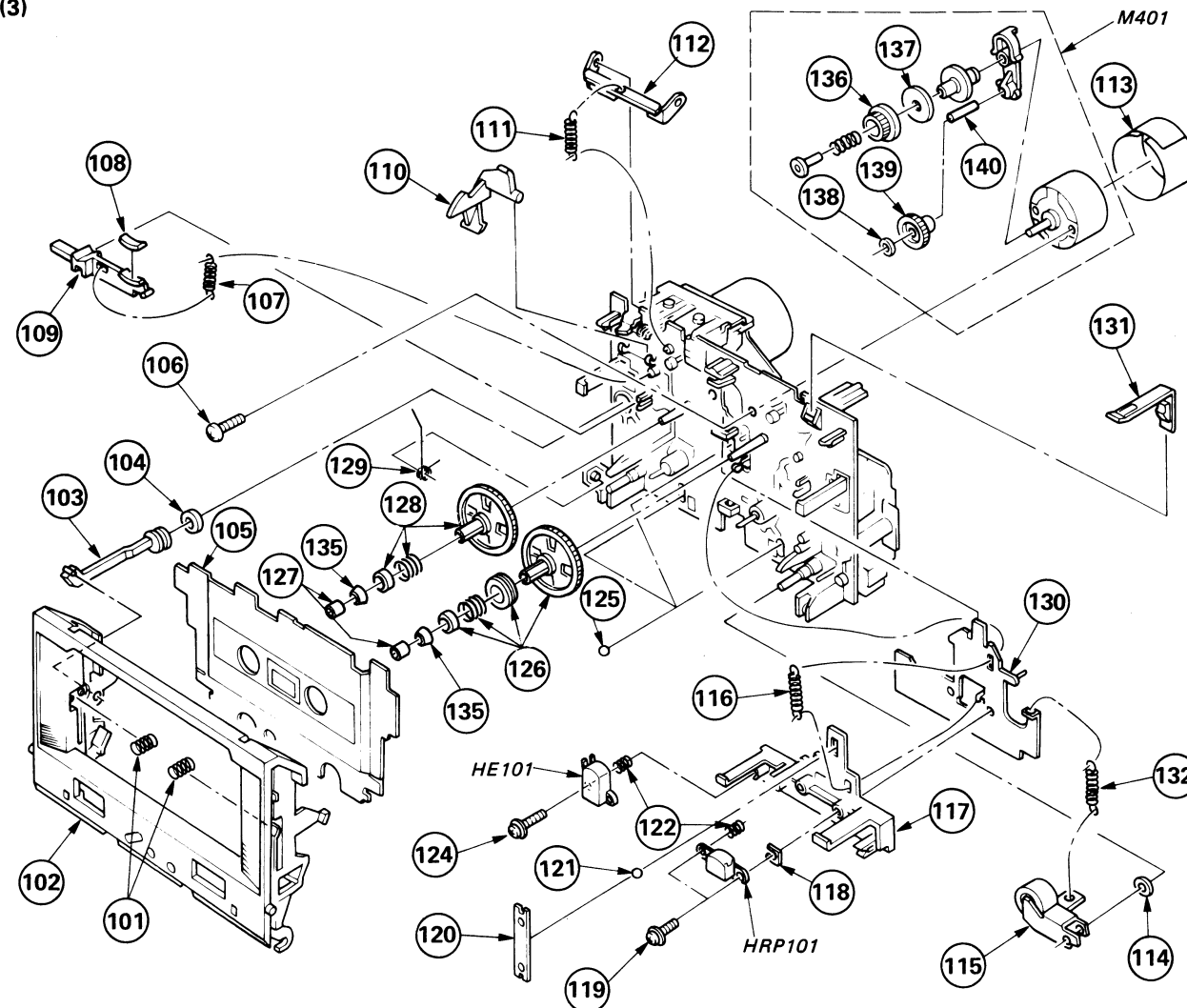


No.	Part No.	Description	Remarks	No.	Part No.	Description	Remarks
1	7-685-871-01	SCREW +BVT 3X6 (S)		20	4-855-804-11	(BLACK)...KNOB, SQUARE	
2	7-685-751-09	SCREW +BVT 3X6 (S)		21	4-855-804-51	(GRY)...KNOB, SQUARE	
3	*3-318-975-01	BRACKET (A), MD		22	*3-318-946-01	PLATE, BOTTOM	
4	X-3318-919-1	(SILVER)...LID ASSY, CASSETTE		23	*3-318-948-13	CHASSIS	
5	X-3318-920-1	(BLACK)...LID ASSY, CASSETTE		24	3-576-731-00	FELT (H)	
6	3-313-292-21	RETAINER, CASSETTE		25	*3-318-973-01	PLATE, SHIELD	
7	4-889-321-01	(SILVER)...SCREW		26	7-682-546-04	SCREW +BVT 3X5 (S)	
8	4-889-321-11	(BLACK)...SCREW		27	*3-318-969-01	RETAINER, PC BOARD	
9	9-911-863-XX	SHEET, INSULATING		28	*3-318-979-01	(AEP)...LABEL, MODEL NUMBER	
10	7-685-752-04	SCREW +BVT 3X8 (S)		29	*3-318-981-01	(UK)...LABEL, MODEL NUMBER	
11	4-904-474-21	(SILVER)...CASE		30	*4-302-759-00	LABEL, SERIAL NUMBER	
12	4-904-474-31	(BLACK)...CASE		31	*3-703-680-00	(US)...LABEL, CAUTION, SUB, NEW UL	
13	3-703-249-01	SCREW, S TIGHT, +PTTWH 3X6		32	3-703-079-21	(UK)...LABEL, CAUTION (BACK)	
14	3-572-365-11	SHEET, INSULATING (A)		33	3-315-159-01	PURSE LOCK (14 DIA.)	
15	*3-318-963-01	BRACKET, AUDIO PC BOARD		34	3-701-417-00	PURSE LOCK (11 DIA.)	
16	*3-701-030-00	LABEL, SERIAL NUMBER		35	*3-322-818-01	HOLDER, CONNECTOR	
17	*3-307-530-83	(E).....PLATE, JACK		36	*3-322-819-01	HOLDER, CONNECTOR	
18	*3-307-530-73	(US,Canadian)...PLATE, JACK		37	*1-551-472-00	(E)....CORD, POWER	
19	7-685-533-19	(E)...SCREW +BTP 2.6X6 TYPE 2 N-S		38	*1-551-908-11	(AEP)...CORD, POWER	
20	3-703-571-00	(US,Canadian)...BUSHING (S)(4516), CORD		39	*1-556-562-00	(UK)...CORD, POWER	
21	3-703-244-00	(AEP,UK,E).....BUSHING (2104), CORD		40	*1-551-628-00	(US,Canadian)...CORD, POWER	
22	7-685-133-19	SCREW +P 2.6X6 TYPE2 NON-SLIT		41	*1-615-664-11	PC BOARD, CONTROL SWITCH	
23	3-703-473-00	SCREW, TERMINAL		42	*A-2056-273-A	PC BOARD ASSY, AUDIO, MOUNTED (INCLUDING REC VOL,HEADPHONES JACK,PHOTO COUPLER, POWER SWITCH, REMOTE CONTROL,METER AND PIN JACK BOARDS)	
24	*3-312-615-11	HEAT SINK					

(2)



(3)



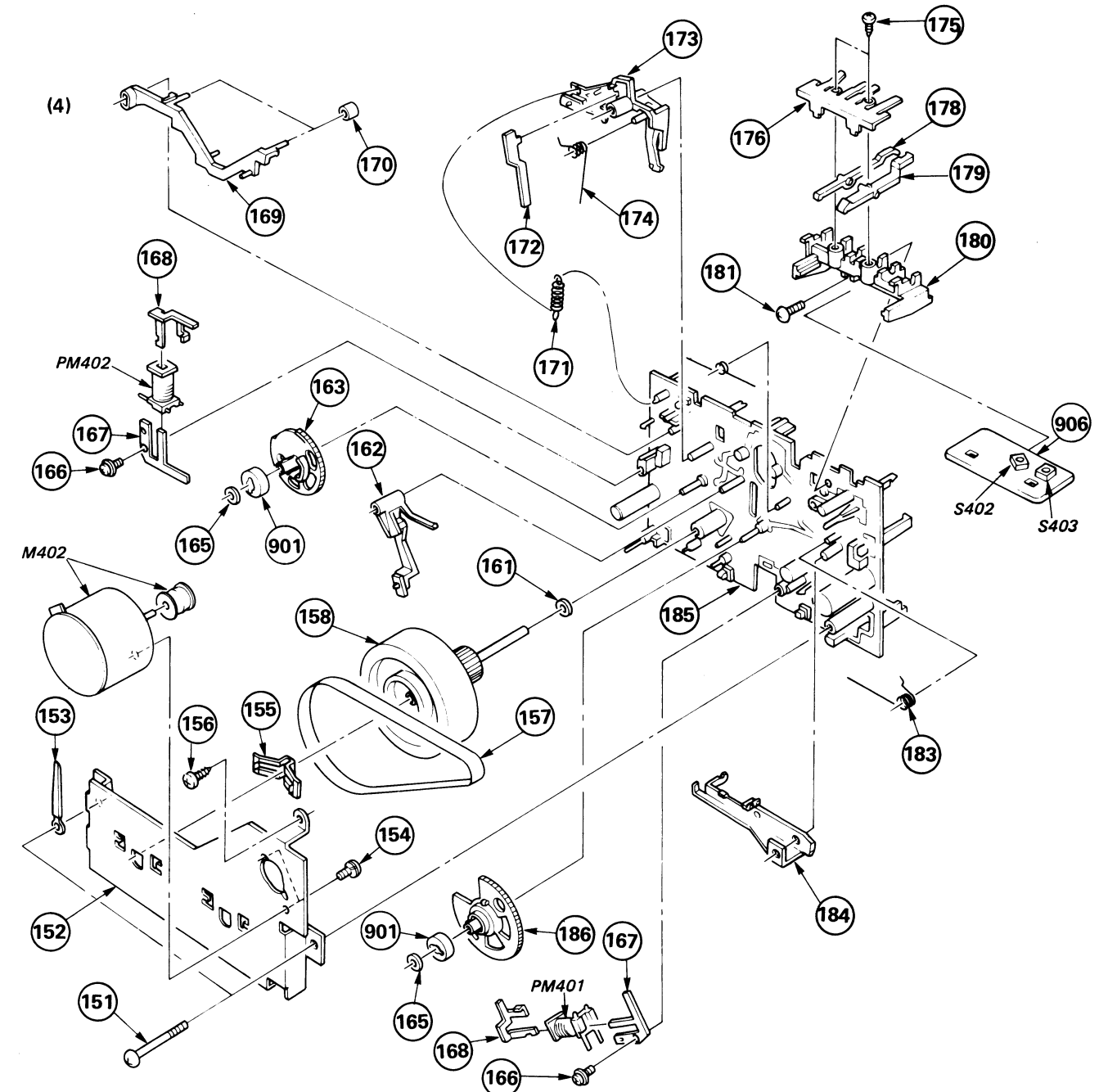
Remarks
ON BUTTON
ON BUTTON

No.	Part No.	Description
102	3-319-682-01	HOLDER, CASSETTE
103	3-319-613-01	PISTON (B)
104	3-312-441-00	RING, PISTON
105	3-313-292-21	RETAINER, CASSETTE
106	7-621-775-60	SCREW +B 2.6X12
107	3-319-694-01	SPRING, TENSION
108	3-575-346-01	FELT, BRAKE
109	*3-319-611-01	LEVER (LEFT), BACK TENSION
110	3-319-669-01	LEVER, EJECT
111	3-312-432-00	SPRING, TENSION
112	*3-319-709-01	LEVER (B), LIFT, SWITCH
113	3-575-457-00	PLATE (B), SHIELD, MOTOR
114	7-623-924-11	WASHER 3.0, NYLONE
115	X-3319-625-1	PINCH LEVER ASSY
116	3-319-713-01	SPRING, TENSION
117	3-319-715-01	BRACKET, HEAD
118	3-319-718-01	SHIM, ADJUSTMENT, HEAD
119	3-319-718-11	SHIM, ADJUSTMENT, HEAD
119	3-319-719-01	SCREW, TOOTHED LOCK (+- 2X13)

(INCLUDING
ER SWITCH,
CK BOARDS)

No.	Part No.	Description
120	*3-319-601-11	SPRING
121	7-671-112-11	BALL, STEEL
122	3-319-712-01	SPRING, COMPRESSION
123	*X-3319-624-1	CHASSIS (S) ASSY, HEAD
124	3-703-496-00	SCREW + PWH2X14
125	7-671-112-01	BALL, STEEL
126	X-3319-626-1	TABLE (L) ASSY, REEL
127	3-319-607-01	BUSHING, REEL TABLE
128	X-3319-627-1	TABLE (L) (CB) ASSY, REEL
129	3-319-614-01	SPRING
131	3-319-717-01	SPRING
132	3-319-711-01	SPRING, TENSION
135	3-531-760-00	CLAW, REEL SPINDLE
136	3-575-324-00	GEAR, LIMITER
137	3-564-027-11	FELT, LIMITER
138	3-307-394-00	RETAINER (B), THRUST
139	3-575-332-00	GEAR, FR
140	3-575-304-00	SHAFT, GEAR, FR

(4)



No.	Part No.	Description
151	7-685-879-01	SCREW +BVTT 3X30 (S)
152	*3-319-665-01	RETAINER, THRUST
153	3-703-150-11	CLAMP
155	3-319-608-01	RETAINER, THRUST
156	7-685-645-11	SCREW +BVTP 3X6 TYPE2 N-S
157	3-319-710-01	BELT (R), CAPSTAN
158	X-3319-630-	FLYWHEEL (T) ASSY
161	3-307-482-00	WASHER, LUMILER
162	*X-3319-615-1	LEVER ASSY, FWD LOCK
163	3-319-688-01	GEAR, PAUSE CAM
165	3-307-394-00	RETAINER (B), THRUST
166	7-687-204-21	TOTSU PTPWH 2X6 NON-SLIT, TYPE2
167	3-307-332-00	ARBOR, FIXED
168	3-307-333-00	ARBOR, TRIGGER
169	*3-319-668-01	PLATE, BRAKE
170	3-319-662-01	RUBBER, BRAKE

No.	Part No.	Description
171	3-555-124-00	SPRING, TENSION
172	3-319-612-01	SPRING
173	*X-3319-614-1	LEVER ASSY, PAUSE
174	3-319-606-01	SPRING
175	7-685-131-21	SCREW +P 2.6X4 TYPE2 SLIT
176	3-319-602-01	SPRING
178	3-319-603-01	LEVER, REC DETECTION
179	3-319-604-01	LEVER, HALF DETECTION
180	3-319-670-01	HOLDER, SWITCH, DETECTION
181	7-685-865-01	SCREW +BVTT 2.6X12 (S)
182	3-319-649-01	SPRING
183	3-319-633-01	SPRING
184	*3-319-676-11	LEVER, FWD
185	X-3319-628-1	CHASSIS ASSY, MECHANICAL
186	3-319-689-01	GEAR, FWD CAM
901	1-452-202-00	MAGNET

SECTION 6 ELECTRICAL PARTS LIST

NOTE:

• Items marked "★" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.

• If there are two or more same circuits in a set such as a stereophonic machine, only typical circuit parts may be indicated and capacitors and resistors in other same circuits may be omitted.

CAPACITORS:

MF:μF, PF:μF.

RESISTORS

• All resistors are in ohms.

• F : nonflammable

COILS

• MMH : mH, UH : μH

SEMICONDUCTORS

In each case, U : μ, for example:

UA....: μA..., UPA....: μPA..., UPC....: μPC,

UPD....: μPD...

The components identified by shading and mark **A** are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque **A** sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

ELECTRICAL PARTS

Ref.No.	Part No.	Description
901	1-452-202-00	MAGNET
902	1-548-574-31	COUNTER, TAPE (NORMAL TYPE)
903	A .1-551-472-00	(E)....CORD, POWER
	A .1-551-908-11	(AEP)...CORD, POWER
	A .1-556-562-00	(UK)....CORD, POWER
	A .1-551-628-00	(US,Canadian)...CORD, POWER
907	*1-615-664-11	PC BOARD, CONTROL SWITCH
908	*A-2056-273-A	PC BOARD ASSY, AUDIO, MOUNTED (INCLUDING REC VOL, HEADPHONES JACK, PHOTO COUPLER, POWER SWITCH, REMOTE CONTROL, METER AND PIN JACK BOARDS)
C101	1-123-380-00	ELECT 1MF 20% 50V
C102	1-162-290-31	CERAMIC 470PF 10% 50V
C103	1-123-380-00	ELECT 1MF 20% 50V
C104	1-123-356-00	ELECT 10MF 20% 16V
C105	1-110-203-00	MYLAR 0.0047MF 5% 50V
C106	1-136-173-00	FILM 0.47MF 5% 50V
C107	1-136-167-00	FILM 0.15MF 5% 50V
C108	1-136-155-00	FILM 0.015MF 5% 50V
C109	1-136-169-00	FILM 0.22MF 5% 50V
C110	1-136-163-00	FILM 0.068MF 5% 50V
C111	1-136-161-00	FILM 0.047MF 5% 50V
C112	1-110-205-00	MYLAR 0.0068MF 5% 50V
C113	1-136-153-00	FILM 0.01MF 5% 50V
C114	1-123-369-00	ELECT 4.7MF 20% 50V
C115	1-123-379-00	ELECT 0.47MF 20% 50V
C116	1-124-185-00	ELECT 4.7MF 20% 50V
C117	1-161-321-00	CERAMIC 680PF 10% 50V
C118	1-136-157-00	FILM 0.022MF 5% 50V
C119	1-124-184-00	ELECT 3.3MF 20% 50V
C120	1-110-203-00	MYLAR 0.0047MF 5% 50V
C122	1-123-381-00	ELECT 2.2MF 20% 50V
C123	1-123-330-00	ELECT 22MF 20% 16V
C124	1-124-185-00	ELECT 4.7MF 20% 50V
C125	1-107-036-00	MICA 68PF 5% 500V
C126	1-161-318-00	CERAMIC 390PF 10% 50V
C127	1-107-165-00	MICA 56PF 5% 500V
C128	1-136-153-00	FILM 0.01MF 5% 50V
C129	1-110-199-00	MYLAR 0.0022MF 5% 50V
C131	1-136-156-00	FILM 0.018MF 5% 50V
C132	1-136-153-00	FILM 0.01MF 5% 50V
C133	1-123-380-00	ELECT 1MF 20% 50V
C134	1-123-381-00	ELECT 2.2MF 20% 50V
C135	1-123-380-00	ELECT 1MF 20% 50V
C136	1-123-356-00	ELECT 10MF 20% 16V
C137	1-162-282-31	CERAMIC 100PF 10% 50V
C139	1-161-330-00	CERAMIC 0.01MF 30% 25V

ELECTRICAL PARTS

Ref.No.	Part No.	Description
C140	1-162-282-31	CERAMIC 100PF 10% 50V
C301	1-123-356-00	ELECT 10MF 20% 16V
C302	1-123-356-00	ELECT 10MF 20% 16V
C303	1-123-381-00	ELECT 2.2MF 20% 50V
C311	1-123-356-00	ELECT 10MF 20% 16V
C312	1-129-708-00	FILM 0.0033MF 10% 630V
C313	1-130-291-00	FILM 0.0056MF 5% 100V
C314	1-130-285-00	FILM 0.0033MF 5% 100V
C315	1-130-285-00	FILM 0.0033MF 5% 100V
C316	1-123-381-00	ELECT 2.2MF 20% 50V
C317	1-123-379-00	ELECT 0.47MF 20% 50V
C318	1-123-306-00	ELECT 47MF 20% 10V
C320	1-123-369-00	ELECT 4.7MF 20% 50V
C321	1-123-356-00	ELECT 10MF 20% 16V
C322	1-161-330-00	CERAMIC 0.01MF 30% 25V
C324	1-162-113-00	CERAMIC 0.01MF 30% 16V
C401	1-110-203-00	MYLAR 0.0047MF 5% 50V
C402	1-123-381-00	ELECT 2.2MF 20% 50V
C403	1-162-284-31	CERAMIC 150PF 10% 50V
C404	1-162-284-31	CERAMIC 150PF 10% 50V
C406	1-162-294-31	CERAMIC 0.001MF 10% 50V
C407	1-123-380-00	ELECT 1MF 20% 50V
C410	1-123-356-00	ELECT 10MF 20% 16V
C411	1-123-356-00	ELECT 10MF 20% 16V
C415	1-123-322-00	ELECT 330MF 20% 16V
C416	1-162-113-00	CERAMIC 0.01MF 30% 16V
C417	1-162-113-00	CERAMIC 0.01MF 30% 16V
C418	1-162-113-00	CERAMIC 0.01MF 30% 16V
C501	1-123-311-00	ELECT 1000MF 20% 10V
C503	1-123-318-00	ELECT 33MF 20% 16V
C504	1-123-324-00	ELECT 1000MF 20% 16V
C505	1-123-310-00	ELECT 470MF 20% 10V
C506	1-123-318-00	ELECT 33MF 20% 16V
C507	1-123-324-00	ELECT 1000MF 20% 16V
CN301	*1-564-509-11	PLUG, CONNECTOR 6P
CN302	*1-564-505-11	PLUG, CONNECTOR 2P
CN401	*1-564-511-11	PLUG, CONNECTOR 8P
CN404	*1-564-337-00	PIN, CONNECTOR 3P
CN406	*1-564-507-31	PLUG, CONNECTOR 4P
CN407	*1-564-507-11	PLUG, CONNECTOR 4P
CN410	*1-560-280-00	CONNECTOR PIN 3P
CN411	*1-560-039-00	PIN, CONNECTOR
CN412	*1-560-039-00	PIN, CONNECTOR
CT101	1-141-225-00	CAP, TUNING, TRIMMER
CT201	1-141-225-00	CAP, TUNING, TRIMMER

ELECTRICAL PARTS

Ref.No.	Part No.	Description
D101	1-806-967-11	DIODE (LED BLOCK)
D102	1-806-968-11	DIODE (LED BLOCK)
D201	1-806-967-11	DIODE (LED BLOCK)
D202	1-806-968-11	DIODE (LED BLOCK)
D301	8-719-107-94	DIODE ISS202-1
D302	8-719-107-94	DIODE ISS202-1
D401	8-719-107-94	DIODE ISS202-1
D402	8-719-107-94	DIODE ISS202-1
D406	8-719-107-94	DIODE ISS202-1
D407	8-719-107-94	DIODE ISS202-1
D411	8-719-915-51	DIODE GL-9PG4
D412	8-719-919-04	DIODE GL-9PR4
D413	8-719-915-50	DIODE GL-9HY4
D416	8-719-107-94	DIODE ISS202-1
D419	8-719-910-66	DIODE HZ6B3L
D420	8-719-200-02	DIODE 10E2
D501	8-719-910-63	DIODE HZ6A3L
D502	8-719-200-23	DIODE 11E2
D503	8-719-200-23	DIODE 11E2
D504	8-719-200-23	DIODE 11E2
D505	8-719-200-23	DIODE 11E2
F101	1-231-388-00	FILTER, LOW PASS
F102	1-235-186-00	ENCAPSULATED COMPONENT
F201	1-231-388-00	FILTER, LOW PASS
F202	1-235-186-00	ENCAPSULATED COMPONENT
FR501	1-217-422-00	FUSIBLE 1 5% 1/2W F
FR502	1-217-422-00	FUSIBLE 1 5% 1/2W F
HE101	8-825-724-00	HEAD, ERASE EF-201-36
HRP101	8-825-507-80	HEAD (PP227-3602F)
IC101	8-759-912-79	IC IR2E02
IC201	8-759-912-79	IC IR2E02
IC301	8-759-600-02	IC M5218L
IC302	8-752-018-70	IC CX20187
IC303	8-759-600-02	IC M5218L
IC304	8-759-101-55	IC CX10032A
IC401	8-759-204-46	IC TC9310N-071
IC402	8-759-602-47	IC M50761-417P
J101	1-507-909-11	JACK, PIN 4P (LINE IN L)
J102	1-507-909-11	JACK, PIN 4P (LINE OUT L)
J201	1-507-909-11	JACK, PIN 4P (LINE IN R)
J202	1-507-909-11	JACK, PIN 4P (LINE OUT R)
J301	1-507-797-21	JACK, LARGE TYPE (MIC)
J302	1-507-982-11	JACK (LARGE TYPE) (HEADPHONES)
L101	1-408-923-00	MICRO INDUCTOR 8.2MMH
L102	1-408-930-00	MICRO INDUCTOR 33MMH
L201	1-408-923-00	MICRO INDUCTOR 8.2MMH
L202	1-408-930-00	MICRO INDUCTOR 33MMH
M401	X-3319-612-1	MOTOR ASSY, REEL
M402	1-541-239-00	MOTOR
PM401	1-454-316-00	SOLENOID, PLUNGER
PM402	1-454-316-00	SOLENOID, PLUNGER
PI401	8-719-902-90	PHOTO INTERRUPTOR SPI201-20

ELECTRICAL PARTS

Ref.No.	Part No.	Description
Q101	8-729-102-03	TRANSISTOR 2SD1020
Q102	8-729-900-80	TRANSISTOR DTC114ES
Q103	8-729-606-33	TRANSISTOR 2SC2603F
Q201	8-729-102-03	TRANSISTOR 2SD1020-H
Q202	8-729-900-80	TRANSISTOR DTC114ES
Q203	8-729-606-33	TRANSISTOR 2SC2603F
Q301	8-729-194-57	TRANSISTOR 2SC945
Q302	8-729-194-57	TRANSISTOR 2SC945
Q303	8-729-606-33	TRANSISTOR 2SC2603F
Q304	8-729-900-61	TRANSISTOR DTA114ES
Q305	8-729-900-61	TRANSISTOR DTA114ES
Q306	8-729-606-33	TRANSISTOR 2SC2785
Q307	8-729-117-54	TRANSISTOR 2SA1175
Q401	8-729-900-80	TRANSISTOR DTC114ES
Q402	8-729-900-65	TRANSISTOR DTA114ES
Q403	8-729-900-80	TRANSISTOR DTC114ES
Q404	8-729-900-80	TRANSISTOR DTC114ES
Q405	8-729-117-54	TRANSISTOR 2SA1175
Q407	8-729-800-83	TRANSISTOR 2SB808
Q408	8-729-800-83	TRANSISTOR 2SB808
Q409	8-729-177-43	TRANSISTOR 2SD774
Q410	8-729-177-43	TRANSISTOR 2SD774
Q411	8-729-900-80	TRANSISTOR DTC114ES
Q412	8-729-177-43	TRANSISTOR 2SD774
Q417	8-729-900-80	TRANSISTOR DTC114ES
Q418	8-729-900-80	TRANSISTOR DTC114ES
Q419	8-729-900-85	TRANSISTOR DTA144WS
Q501	8-729-180-92	TRANSISTOR 2SD809-K
Q502	8-729-606-33	TRANSISTOR 2SC2603F
Q503	8-729-173-13	TRANSISTOR 2SB731
Q504	8-729-117-54	TRANSISTOR 2SA1175
Q505	8-729-811-24	TRANSISTOR 2SD1012
Q506	8-729-800-83	TRANSISTOR 2SB808
R101	1-247-867-00	CARBON 33K 5% 1/6W
R103	1-247-855-00	CARBON 10K 5% 1/6W
R104	1-247-819-00	CARBON 330 5% 1/6W
R105	1-247-865-00	CARBON 27K 5% 1/6W
R106	1-247-871-00	CARBON 47K 5% 1/6W
R107	1-247-843-00	CARBON 3.3K 5% 1/6W
R108	1-247-851-00	CARBON 6.8K 5% 1/6W
R109	1-247-822-00	CARBON 430 5% 1/6W
R110	1-247-847-00	CARBON 4.7K 5% 1/6W
R111	1-247-840-00	CARBON 2.4K 5% 1/6W
R112	1-247-851-00	CARBON 6.8K 5% 1/6W
R113	1-247-827-00	CARBON 680 5% 1/6W
R114	1-249-421-11	CARBON 2.2K 5% 1/6W
R115	1-247-855-00	CARBON 10K 5% 1/6W
R116	1-247-847-00	CARBON 4.7K 5% 1/6W
R117	1-247-863-00	CARBON 22K 5% 1/6W
R118	1-249-421-11	CARBON 2.2K 5% 1/6W
R119	1-249-421-11	CARBON 2.2K 5% 1/6W
R120	1-247-831-00	CARBON 1K 5% 1/6W
R121	1-247-833-00	CARBON 1.2K 5% 1/6W
R122	1-249-421-11	CARBON 2.2K 5% 1/6W
R123	1-247-840-00	CARBON 2.4K 5% 1/6W
R124	1-247-116-00	CARBON 240 5% 1/4W
R125	1-246-529-00	CARBON 220K 5% 1/4W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R126	1-247-107-00	CARBON	100	5%	1/4W
R127	1-246-524-00	CARBON	130K	5%	1/4W
R128	1-247-149-00	CARBON	5.6K	5%	1/4W
R129	1-247-863-00	CARBON	22K	5%	1/6W
R130	1-247-857-00	CARBON	12K	5%	1/6W
R131	1-247-858-00	CARBON	13K	5%	1/6W
R132	1-247-887-00	CARBON	220K	5%	1/6W
R133	1-247-821-00	CARBON	390	5%	1/6W
R135	1-247-831-00	CARBON	1K	5%	1/6W
R136	1-247-879-00	CARBON	100K	5%	1/6W
R137	1-247-859-00	CARBON	15K	5%	1/6W
R140	1-247-837-00	CARBON	1.8K	5%	1/6W
R141	1-247-815-00	CARBON	220	5%	1/6W
R142	1-249-421-11	CARBON	2.2K	5%	1/6W
R143	1-247-855-00	CARBON	10K	5%	1/6W
R144	1-247-859-00	CARBON	15K	5%	1/6W
R145	1-247-847-00	CARBON	4.7K	5%	1/6W
R146	1-247-879-00	CARBON	100K	5%	1/6W
R147	1-247-861-00	CARBON	18K	5%	1/6W
R148	1-247-878-00	CARBON	91K	5%	1/6W
R149	1-247-879-00	CARBON	100K	5%	1/6W
R150	1-247-855-00	CARBON	10K	5%	1/6W
R151	1-247-855-00	CARBON	10K	5%	1/6W
R155	1-247-841-00	CARBON	2.7K	5%	1/6W
R301	1-247-879-00	CARBON	100K	5%	1/6W
R302	1-247-883-00	CARBON	150K	5%	1/6W
R303	1-247-831-00	CARBON	1K	5%	1/6W
R304	1-247-831-00	CARBON	1K	5%	1/6W
R307	1-247-847-00	CARBON	4.7K	5%	1/6W
R308	1-247-835-00	CARBON	1.5K	5%	1/6W
R309	1-247-773-00	CARBON	3.9	5%	1/6W
R310	1-247-861-00	CARBON	18K	5%	1/6W
R311	1-247-861-00	CARBON	18K	5%	1/6W
R312	1-247-855-00	CARBON	10K	5%	1/6W
R313	1-247-858-00	CARBON	13K	5%	1/6W
R314	1-247-855-00	CARBON	10K	5%	1/6W
R315	1-247-840-00	CARBON	2.4K	5%	1/6W
R316	1-247-847-00	CARBON	4.7K	5%	1/6W
R317	1-247-879-00	CARBON	100K	5%	1/6W
R318	1-247-843-00	CARBON	3.3K	5%	1/6W
R319	1-247-861-00	CARBON	18K	5%	1/6W
R320	1-247-843-00	CARBON	3.3K	5%	1/6W
R321	1-247-855-00	CARBON	10K	5%	1/6W
R322	1-247-815-00	CARBON	220	5%	1/6W
R323	1-247-823-00	CARBON	470	5%	1/6W
R324	1-247-823-00	CARBON	470	5%	1/6W
R401	1-247-872-00	CARBON	51K	5%	1/6W
R402	1-247-863-00	CARBON	22K	5%	1/6W
R405	1-247-841-00	CARBON	2.7K	5%	1/6W
R406	1-247-903-00	CARBON	1M	5%	1/6W
R408	1-247-861-00	CARBON	18K	5%	1/6W
R409	1-247-857-00	CARBON	12K	5%	1/6W
R410	1-247-861-00	CARBON	18K	5%	1/6W
R411	1-247-807-00	CARBON	100	5%	1/6W

ELECTRICAL PARTS

Ref.No.	Part No.	Description			
R412	1-247-783-00	CARBON	10	5%	1/6W
R413	1-247-819-00	CARBON	330	5%	1/6W
R414	1-247-879-00	CARBON	100K	5%	1/6W
R415	1-247-855-00	CARBON	10K	5%	1/6W
R425	1-247-831-00	CARBON	1K	5%	1/6W
R426	1-247-831-00	CARBON	1K	5%	1/6W
R427	1-247-821-00	CARBON	390	5%	1/6W
R428	1-247-849-00	CARBON	5.6K	5%	1/6W
R429	1-247-819-00	CARBON	330	5%	1/6W
R430	1-247-831-00	CARBON	1K	5%	1/6W
R431	1-247-831-00	CARBON	1K	5%	1/6W
R434	1-247-863-00	CARBON	22K	5%	1/6W
R435	1-247-815-00	CARBON	220	5%	1/6W
R436	1-247-821-00	CARBON	390	5%	1/6W
R437	1-247-821-00	CARBON	390	5%	1/6W
R439	1-247-863-00	CARBON	22K	5%	1/6W
R440	1-247-855-00	CARBON	10K	5%	1/6W
R445	1-247-879-00	CARBON	100K	5%	1/6W
R446	1-247-831-00	CARBON	1K	5%	1/6W
R501	1-247-143-00	CARBON	3.3K	5%	1/4W
R502	1-247-125-00	CARBON	560	5%	1/4W
R503	1-247-131-00	CARBON	1K	5%	1/4W
R504	1-247-131-00	CARBON	1K	5%	1/4W
R505	1-247-141-00	CARBON	2.7K	5%	1/4W
R506	1-247-131-00	CARBON	1K	5%	1/4W
R507	1-247-131-00	CARBON	1K	5%	1/4W
R508	1-247-133-00	CARBON	1.2K	5%	1/4W
RV101	1-230-713-21	RES, VAR, SLIDE 20K/20K			
RV102	1-228-994-00	RES, ADJ, CARBON 10K			
RV104	1-228-994-00	RES, ADJ, CARBON 10K			
RV201	1-230-713-21	RES, VAR, SLIDE 20K/20K			
RV202	1-228-994-00	RES, ADJ, CARBON 10K			
RV204	1-228-994-00	RES, ADJ, CARBON 10K			
RY301	1-515-547-11	RELAY			
S301	1-570-252-11	SWITCH, PUSH (5 KEY)			
S302	1-570-252-11	SWITCH, PUSH (5 KEY)			
S303	1-570-252-11	SWITCH, PUSH (5 KEY)			
S304	1-570-252-11	SWITCH, PUSH (5 KEY)			
S305	1-570-252-11	SWITCH, PUSH (5 KEY)			
S405	1-554-303-00	SWITCH, KEY BOARD (REC)			
S406	1-554-303-00	SWITCH, KEY BOARD (FWD)			
S407	1-554-303-00	SWITCH, KEY BOARD (REW)			
S408	1-554-303-00	SWITCH, KEY BOARD (FF)			
S409	1-554-303-00	SWITCH, KEY BOARD (PAUSE)			
S410	1-554-303-00	SWITCH, KEY BOARD (REC MUTE)			
S411	1-554-303-00	SWITCH, KEY BOARD (STOP)			
S501	1-570-103-11	SWITCH, PUSH (1 KEY)			
S502	△.1-570-307-00	(E)...SWITCH, SLIDE (VOLTAGE SELECT)			
T301	1-433-298-11	TRANSFORMER, BIAS OSCILLATION			
T401	△.1-448-154-11	(US,Canadian)...TRANSFORMER, POWER			
T401	△.1-448-155-11	(AEP,UK).....TRANSFORMER, POWER			
T401	△.1-448-156-11	(E).....TRANSFORMER, POWER			
X401	1-527-532-00	OSCILLATOR, CERAMIC			

The components identified by shading and mark △ are critical for safety. Replace only with part number specified.

Les composants identifiés par une trame et une marque △ sont critiques pour la sécurité. Ne les remplacer que par une pièce portant le numéro spécifié.

ACCESSORY & PACKING MATERIAL

No.	Part No.	Description
201	1-551-734-11	CORD, CONNECTION (RK- 74A)
202	1-556-372-41	CORD, CONNECTION (4 CORE)
203	3-318-958-01	CUSHION (LEFT), LOWER
204	3-760-448-11	(Canadian,AEP,UK,E)...MANUAL, INSTRUCTION
204	3-760-448-21	(US)...MANUAL, INSTRUCTION
204	3-760-448-41	(Canadian,AEP)...MANUAL, INSTRUCTION
205	3-318-959-01	CUSHION (RIGHT), LOWER
206	3-318-960-01	CUSHION (LEFT), UPPER
207	3-318-961-01	CUSHION (RIGHT), UPPER
208	3-318-988-01	INDIVIDUAL CARTON
209	3-701-630-00	BAG, POLYETHYLENE
210	3-703-895-01	(Canadian,AEP:BLACK)...LABEL, COLOR
211	3-703-906-01	(Canadian,AEP:SILVER)...LABEL, COLOR
212	4-876-352-00	SHEET, PROTECTION
213	8-890-454-10	(Canadian)...TAPE (UCX-S)

MC-Service

Sony Corporation